APPENDIX C

Material Safety Data Sheets
For
Alternatives Removed from Further Consideration
Under this Project

AMERON INTERNATIONAL
Performance Coatings & Finishes

PSX® 700

Engineered Siloxane coating

PSX 700 Series
Patent Nos. 5,618,860 and 5,275,645

PSX® Advantage: *PSX ®700 is the world's first weatherable epoxy it embodies the properties of both a high-performance epoxy and an acrylic polyurethane in one coat. This multi-purpose coating offers "breakthrough" weather resistance and corrosion control.*

Product Data/ Application Instructions

- Unique, high-gloss, self-priming coating
- Can be applied directly over inorganic zinc
- Gloss and appearance retention exceeding the best polyurethane
- Significantly lower applied costs
- Excellent resistance to acid and corrosion
- High solids, low VOC
- Resists high humidity and moisture
- Applied by brush, roller or spray—without thinning
- Outstanding resistance to chemical splash and spill

Typical Uses

PSX 700 adheres strongly to bare steel, coated steel and inorganic zinc silicate coated surfaces on new construction, repair and field maintenance coating projects. It provides effective long-term corrosion control and weatherability.

- Structural steel
  - –Bridges
  - –Marine
- Tanks
- Piping
- Industrial power plants
  - – Power
  - – Wastewater treatment
  - – Pulp and paper
  - – Chemical and petrochemical
- Concrete walls and floors
- Transportation
  - – Rail car exterior
  - – Vehicle equipment–buses, trucks
- Marine
  - – Decks
  - – Topside and superstructures on ships
  - – Boottops
  - – Barges and offshore platforms

Physical Data

Finish	Gloss
Color	See color card

Yellow, red and orange colors will fade faster than other colors due to the replacement of lead-based pigments with lead-free pigments in these colors.

Components	2
Curing mechanism	Chemical reaction
Volume solids (calculated)	
PSX 700	90% ± 3%
PSX 700FD	90% ± 3%
Dry film thickness per coat	3 – 7 mils (75 – 175 microns)
Coats*	1 or 2

Theoretical coverage	ft^2/gal	m^2/L
1 mil (25 microns)	1444	35.5
3 mils (75 microns)	481	11.8
5 mils (125 microns)	289	7.1
7 mils (175 microns)	206	5.1

VOC**	lb/gal	g/L
700 & 700FD (EPA method 24)	1.0	120
700 & 700FD mixed/thinned (calculated) (1 pt/gal)	1.7	204

Temperature resistance, dry	°F	°C
continuous	200	93
intermittent	250	121

Flash point (SETA)	°F	°C
resin	207	97
cure	205	96
FD cure	180	82
Amercoat 12	2	-17
Amercoat 65	81	27
Amercoat 101	145	63

Qualifications

NFPA – Class A
USDA – Incidental food contact

** When applying more than one coat, it is recommended that total dry film thickness not exceed 10 mils.*

***The mixed and applied coating cure reaction will produce VOC of mixed alcohols.*

Typical Properties

Physical

Abrasion resistance (ASTM D4060)	
1 kg load/1000 cycles	weight loss
CS-17 wheel	53 mg
Adhesion, elcometer (ASTM D4541)	2700 psi
Elongation (ASTM D522)	14%

Performance

Salt spray (ASTM B117)	5500 hours
Face corrosion, blistering	None
Humidity (ASTM D2247)	5500 hours
Face corrosion, blistering	None
Gloss retention (ASTM G53) QUV-B bulb	
Greater than 50% gloss retention at 26 weeks	

Chemical Resistance Guide

Environment	Splash and Spillage	Fumes and Weather
Acidic	E	E
Alkaline	E	E
Salt solutions		
acidic	E	E
neutral	E	E
alkaline	E	E
Fresh water	E	E
Solvents	E	E
Petroleum products	E	E

F-Fair G-Good E-Excellent

This table is only a guide to show typical resistances of PSX® 700. For specific recommendations, contact your Ameron representative for your particular corrosion protection needs.

Systems Using PSX 700 or 700FD

Substrate	Coats	DFT per coat
Steel (blasted)	1 or 2	5-7
Intact coating	1	3
Dimetcote†	1	4-6
Amercoat 68HS†, 370 or 385	1	3-5
Amerlock Series	1	3-5
Concrete††	2	5-7
Amercoat 385, Amerlock Series	1	3-5
Masonry		
Amerlock 400BF	1	3-5
Nu-Klad 965	1	3-5

† *Mist-coat/full-coat application may be required. See special thinning instructions.*

†† *Fill voids with Nu-Klad 114A prior to applying Amercoat 385, Amerlock Series.*

Application Data

Applied over**	Prepared or primed steel, primed concrete, prepared galvanizing or aluminum
Surface preparation	
steel	SSPC-SP5, 6 or 10
concrete	ASTM D4259 or 4260
galvanizing	Galvaprep or blast lightly
aluminum	Alumiprep or blast lightly
aged coatings	Contact your Ameron representative
Primers	Nu-Klad® 105A, Dimetcote® 9 Series, Dimetcote® 21-5, Amerlock® Series, Amercoat 68HS, 351, 370, 385, 395FD
Method	Airless or conventional spray, brush or roller
Mixing ratio (by volume)	4 parts resin to 1 part cure

Pot life (hours)‡

	°F/°C		
	90/32	70/21	50/10
700 & 700FD	1½	4	6½

‡ *Thinning material with ½ pt/gal after 3 hours will extend pot life to 5 hours at 70°F.*

Environmental Conditions

Temperature	°F	°C
air	40 to 120	4 to 49
surface	40 to 120	4 to 49
Relative humidity	40% minimum	

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation during application and initial dry through. Relative humidity lower than 40% will extend dry times.

Heat curing

Allow 700 or 700FD to dry to touch before exposing to curing temperatures above 140°F.

Drying time (ASTM D1640) (hours) @ 40% R.H. or above

	°F/°C			
	90/32	70/21	50/10	32/0
touch (700)	1½	3	6	12
touch (700FD)	1	2	4½	9
through (700)	4	6	11	38
through (700FD)	3	4½	8½	24

Recoat/topcoat time (hours) @ 40% R.H. or above

	°F/°C			
	90/32	70/21	50/10	32/0
minimum (700 over 700)	3	4½	9	32
minimum (700FD over 700FD)	2	3	7	18
maximum‡‡	None			
Thinner	Amercoat 65 or 101			
Equipment cleaner	Thinner or Amercoat 12			

‡‡ *See surface preparation for aged coatings.*

** *Appearance will vary depending on substrate and application method. Use two coats of PSX® 700 over bare concrete.*

Surface Preparation

Coating performance is, in general, proportional to the degree of surface preparation. Refer to specifications for the specific primer being used. Prior to coating, primed surface must be clean, dry, undamaged and free of all contaminants including salt deposits. Round off all rough welds and remove all weld spatter.

Steel – Remove all loose rust, dirt, grease or other contaminants by one of the following depending on the degree of cleanliness required: SSPC-SP6 or 10. The choice of surface preparation will depend on the system selected and end-use service conditions.

Concrete – Acid etching (ASTM D4260) or abrasive blast (ASTM D4259) new concrete before priming.

Aluminum – Remove oil, grease or soap film with neutral detergent or emulsion cleaner, treat with Alodine® 1200, Alumiprep® or equivalent or blast lightly with fine abrasive.

Galvanizing – Remove oil or soap film with detergent or emulsion cleaner, then use zinc treatment such as Galvaprep® or equivalent or blast lightly with fine abrasive.

Aged coatings – Contact your Ameron representative. A test patch of PSX® 700 over intact clean coating and observation for film defects over a period of time may be required, dependant upon the type of aged coating.

PSX® 700 is compatible over Amercoat 450HS and Amershield.

Repair – Prepare damaged areas to original surface preparation specifications, feathering edges of intact coating. Thoroughly remove dust or abrasive residue before touch up.

Application Equipment

The following is a guide; suitable equipment from other manufacturers may be used. Changes in pressure, hose and tip size may be needed for proper spray characteristics.

Airless spray – Standard equipment with a 30 to 1 pump ratio or larger with a 0.015- to 0.021-in. (0.38 to 0.53 mm) fluid tip.

Conventional spray – Industrial equipment such as DeVilbiss MBC or JGA spray gun with 78 or 765 air cap and "E" fluid tip, or Binks No. 18 or 62 gun with a 66 x 63 PB nozzle set up. Separate air and fluid pressure regulators, and a moisture and oil trap in the main air supply line are recommended.

Power mixer – Jiffy Mixer powered by an air or an explosion-proof electric motor.

Brush – Natural bristle. Maintain wet edge.

Roller – Use industrial roller. Level any air bubbles with bristle brush.

Environmental Conditions

Temperature	°F	°C
air	40 to 120	4 to 49
surface	40 to 120	4 to 49
Relative humidity	40% minimum	

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation during application and initial dry through. Relative humidity lower than 40% will extend dry times.

Heat curing

Allow 700 to dry to touch before exposing to curing temperatures above 140°F.

Application Procedure

Adhere to all application instructions, precautions, conditions, and limitations to obtain the maximum performance. For conditions outside the requirements or limitations described, contact your Ameron representative.

1. Flush equipment with thinner or Amercoat®12 before use.
2. Mix to a uniform consistency.
3. Add PSX® 700 cure to 700 resin. Mix thoroughly until uniformly blended.

Pot life (hours)*

	°F/°C		
	90/32	70/21	50/10
700 & 700FD	1 ½	4	6 ½

4. If needed for workability, thin** with Amercoat 65 or 101 up to 1 pint per gallon PSX® 700.
5. Apply a wet coat in even, parallel passes, overlap each pass 50 percent to avoid holidays, bare areas and pinholes. If required, follow with a cross spray at right angles to first pass.

Drying time (ASTM D1640) (hours) @ 40% R.H. or above

	°F/°C			
	90/32	70/21	50/10	32/0
touch (700)	1½	3	6	12
touch (700FD)	1	2	4½	9
through (700)	4	6	11	38
through (700FD)	3	4½	8½	24

Recoat/topcoat time (hours) @ 40% R.H. or above

	°F/°C			
	90/32	70/21	50/10	32/0
minimum (700 over 700)	3	4½	9	32
minimum (700FD over 700FD)	2	3	7	18

6. Brush and/or roll applications will require 2 coats to achieve a 7 mil DFT. There will be some surface texture, which is typical for brush and roll applications.
7. When applying PSX® 700 directly over Dimetcote® or Amercoat 68HS see special thinning instructions.
8. Clean all equipment with thinner or Amercoat 12 cleaner immediately after use.

**Thinning material with ½ pt/gal after 3 hours will extend pot life to 5 hours at 70°F.*
***See special thinning for application over Dimetcote and Amercoat 68HS primers.*
****See surface preparation for aged coatings.*

Thinning for Application over Dimetcote

Thin PSX® 700 with Amercoat 65 or 101 up to 1 pint per gallon to assist in film thickness control and to minimize bubbling. This will depend on the age of the coating, surface roughness and conditions during curing. Based on conditions an interval between the mist-coat and full-coat may assist in the application.

Safety Precautions

Read each component's material safety data sheet before use. Mixed material has hazards of each component. Safety precautions must be strictly followed during storage, handling and use.

CAUTION – Improper use and handling of this product can be hazardous to health and cause fire or explosion.

Do not use this product without first taking all appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: implementation of proper ventilation, use of proper lamps, wearing of proper protective clothing and masks, tenting and proper separation of application areas. Consult your supervisor. Proper ventilation and protective measures must be provided during application and drying to keep spray mists and vapor concentrations within safe limits and to protect against toxic hazards. Necessary safety equipment must be used and ventilation requirements carefully observed, especially in confined or enclosed spaces, such as tank interiors and buildings.

This product is to be used by those knowledgeable about proper application methods. Ameron makes no recommendation about the types of safety measures that may need to be adopted because these depend on application environment and space, of which Ameron is unaware and over which it has no control.

If you do not fully understand these warnings and instructions or if you cannot strictly comply with them, do not use the product.

Note: Consult Code of Federal Regulations Title 29, Labor, parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable federal, state and local regulations on safe practices in coating operations.

This product is for industrial use only. Not for residential use.

Warranty

Ameron warrants its products to be free from defects in material and workmanship. Ameron's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Ameron's option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to Ameron in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Ameron of such nonconformance as required herein shall bar Buyer from recovery under this Warranty.

Ameron makes no other warranties concerning the product. No other warranties, whether express, implied, or statutory, such as warranties of merchantability or fitness for a particular purpose, shall apply. In no event shall Ameron be liable for consequential or incidental damages.

Any recommendation or suggestion relating to the use of the products made by Ameron, whether in its technical literature, or in response to specific inquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Limitation of Liability

Ameron's liability on any claim of any kind, including claims based upon Ameron's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. **In no event shall Ameron be liable for consequential or incidental damages.**

Shipping Data

Packaging unit	1-gal	5-gal
cure	0.20 gal in 1-qt can	1 gal in 1-gal can
FD cure	0.20 gal in 1-qt can	1 gal in 1-gal can
resin	0.80 gal in 1-gal can	4 gal in 5-gal can

Shipping weight (approx)	lb	kg
1-gal unit		
cure	2.0	0.9
FD cure	1.8	0.8
resin	10.3	4.7
5-gal unit		
cure	9.0	4.1
FD cure	8.9	4.0
resin	50	22.7

Shelf life when stored indoors at 40 to 100°F (4 to 38°C)

resin and cure	1 year from shipment date

Numerical values are subject to normal manufacturing tolerances, colors and testing variances. Allow for application losses and surface irregularities.

This product is photochemically reactive as defined by the South Coast Air Quality Management District's Rule 102 or equivalent regulations.

AMERON INTERNATIONAL

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AMERON
Coatings

M. S. D. S.
Material Safety Data Sheet

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : PSX 700 AAF PEARL GRAY RESIN
IDENTIFICATION NUMBER: 700B20946
PRODUCT CLASS : ENGINEERED SILOXANE; PATENTS -5,618,860 & 5,275,645
HEALTH : WARNING HMIS/NFPA : H2F1R0

Ameron International
Protective Coatings Group
201 North Berry St.
Brea, CA 92821

EMERGENCY:800-424-9300 (ChemTrec)
24 Hours Emergency Hotline

INFORMATION: William B. Dances, PHONE: 714-529-1951 PREPARE DATE: 05/09/02
PREVIOUS REVISION DATE: 05/09/02

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT % LESS THAN
01	PROPRIETARY (Methanol, hydrolysis generated, 250 ppm ceiling)	PROPRIETARY	40.0 %
02	PROPRIETARY (Epch**# <10ppm, DGE 130ppm, trace phenyl glycidyl ether**)	PROPRIETARY	35.0 %
03	+ TITANIUM DIOXIDE (As TiO2, trace impurities, <6% aluminum hydroxide, <10% amorphous silica)	13463-67-7	20.0 %

04	CALCIUM SILICATE	13983-17-0	10.0 %
05	UV ABSORBER	41556-26-7	5.0 %

(Mfg TWA 1mg/m3. Trace contaminants: dimethyl sebacate, 4-piperidinol)

06	SILICA (AMORPHOUS)	112926-00-8	5.0 %

(CAS # also 7631-86-9)

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

	EXPOSURE LIMITS						
	----- ACGIH ----		----- OSHA -----		VP	TOXICITY	
	TLV-TWA	TLV-TWA	PEL-TWA	PEL-TWA	mmHg	LD50	LC50
ITEM	ppm	Mg/M3	ppm	Mg/M3	@68F	g/kg	ppm
01	dna	dna	dna	dna	N.A.	dna	dna
02	dna	dna	dna	dna	N.A.	2.000	dna
03	dna	5.00	dna	5.000	N.A.	10.000	6820.000
04	dna	5.00	dna	5.000	N.A.	dna	dna
05	dna	dna	dna	dna	N.A.	dna	dna
06	dna	3.0	dna	5.0	N.A.	dna	dna

REGULATORY: + Pigment content is dependent on color. **CALIF.TITLE 26:22-12000 (PROP 65). WARNING: This product contains a chemical known to the State of California to cause cancer. #CALIF.TITLE 26:22-12000 (PROP 65). WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. All ingredients are on TSCA inventory or are exempt. Toxic chemicals marked (SARA, CERCLA, HAPs) are subject to reporting requirements of SARA (40CFR 355 and 372), CERCLA (40CFR 302), or HAPs (40CFR 63).

(S)=Skin; LD50=Dermal.rabbit; LC50=Inhalation,rat; dna=data not available; na=not applicable

SECTION 3 - HAZARDS IDENTIFICATION

EXPOSURE EFFECTS: Vapor or spray mist or spattered material can be harmful. Irritating to eyes, skin, and if inhaled; to nose and throat. Excessive or prolonged inhalation can cause headache, nausea or dizziness. Repeated and prolonged occupational overexposure to solvents is associated

with permanent brain and nervous system damage. Intentional abuse, misuse or other massive exposure to solvents may cause multiple organ damage and/or death.

OVER-EXPOSURE (prolonged or repeated use): CAN AGGRAVATE OR ACCENTUATE ANY OF THESE EFFECTS.

SKIN: Irritant. Sensitization or allergic reaction, such as rash or hives. Can cause defatting and drying of skin.

INHALATION: Irritant. Lung injury. Respiratory sensitization and allergic reaction such as asthma.

EYES: Irritant.

INGESTION: Harmful if swallowed.

TARGET ORGANS: Lungs. Skin. Eyes. Stomach.

SECTION 3 - HAZARDS IDENTIFICATION

MEDICAL CONDITIONS AGGRAVATED: Skin. Eyes. Respiratory. Allergies.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT INHALATION INGESTION EYE CONTACT

SECTION 4 - FIRST AID MEASURES

FIRST AID PROCEDURES: INHALATION: Remove to fresh air. Restore normal breathing. Treat symptomatically. See physician. SKIN: Wash thoroughly with soap and water. Remove contaminated clothing.Consult physician if irritation persists. EYES: Flush immediately with plenty of water for at least 15 minutes and get medical attention. INGESTION: Drink 1 or 2 glasses of water to dilute. Never give anything by mouth to an unconscious person. Do not induce vomiting. Consult physician or poison control center IMMEDIATELY. Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 207 F (SETA) LOWER EXPLOSIVE LIMIT: N.A.
UPPER EXPLOSIVE LIMIT: N.A.

FLAMMABILITY - OSHA: COMBUSTIBLE - CLASS IIIB
DOT: NOT REGULATED

EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL

LOWEST FLASHING SOLVENT:

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers may explode when exposed to extreme heat and pressure buildup. May produce a floating fire hazard. Isolate from electrical equipment, sparks, heat and open flame. Vapors may spread long distances, cause flash fire or ignite explosively.

FIREFIGHTING PROCEDURES: Wear full protective equipment, self-contained breathing apparatus. Water may be used to cool closed containers to prevent pressure build-up or explosion when exposed to extreme heat.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL, LEAKS: Remove all sources of ignition. Avoid breathing vapors. Ventilate area. Use absorbent, inert cleanup materials. (DO NOT use sawdust.) Remove absorbent material with non-sparking tools. Place in separate container. Keep out of sewers and waterways. If entry is threatened or occurs, notify local authorities.

SECTION 7 - HANDLING AND STORAGE

HANDLING AND STORAGE: Keep container closed, upright when not in use. Store in cool, dry, well-ventilated area. Avoid prolonged storage temperatures above 100F. Use caution when pouring. Avoid breathing sanding dust. Do not weld or flame cut on empty container.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Implement administrative and engineering controls to reduce exposure. Provide sufficient ventilation in volume and pattern to keep air contaminant concentrations below the TLV limits. Remove welding or flame cutting decomposition products; follow current,ANSI Z49.1,"Safety in Welding and Cutting". Refer to 29 CFR parts 1910 and 1915, for coating operations; part 1910.146, Confined Spaces.

RESPIRATORY PROTECTION: Wear NIOSH/MSHA certified respirator designed to remove a combination of particulates (dust or spray mist) and vapor. When brushing, rolling or spreading; select the appropriate respiratory protection for the conditions. For specific conditions, refer to current "NIOSH Pocket Guide to Chemical Hazards". In confined or restricted ventilation areas use air-line respirators or hoods. Refer to 29 CFR, OSHA

parts 1910.134 and 1915 for coating operations;part 1910.146 Confined Spaces;ANSI Z88.2,Practices for Respiratory Protection; 42 CFR, part 84 Particulate Respirators.

PROTECTIVE CLOTHING AND EQUIPMENT: Dependent upon application method, wear resistant coveralls, gloves and shoe coverings to prevent skin contact. Wear solvent resistant glasses with splash guards or face shield to protect eyes from splash, spatter and/or spray mist.Consult 29 CFR 1910.132, 133, 136, 138; ANSI Z87.1, Z41. Use explosion and spark-proof equipment.

HYGIENIC PRACTICES: Wash thoroughly after handling and before eating, smoking or using toilet. Launder contaminated clothing before use. Destroy contaminated leather and absorbent shoes, which cannot be decontaminated, to prevent reuse.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE : 212 - 212 F VAPOR DENSITY : Is heavier than air
ODOR : SOLVENT WEIGHT PER GAL : 11.4679
APPEARANCE : LIQUID EVAPORATION RATE: Is slower than Butyl
SOLUBILITY IN H2O : NO Acetate
EPA MIXED VOC, G/L: 120 EPA MIXED THIN VOC, G/L : 204
THINNER : 900 @ 1.000 PINTSPHOTOCHEMICALLY REACTIVE: No
VOLATILE VOLUME % : 0.28

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Heat, open flame, arc or sparks. Water or moisture.

INCOMPATIBILITY: Strong oxidizers, acids and alkalies.

HAZARDOUS DECOMPOSITION PRODUCTS: (BY FIRE, BURNING OR WELDING); CO, CO2.
NOx. Aldehydes. Phenols. Silicon oxide fumes. Methanol. Formaldehyde at temperatures above 300F (150C).

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

SECTION 11 - TOXICOLOGICAL PROPERTIES

TOXICOLOGICAL PROPERTIES: See Section 2.

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: No Information.

SECTION 13 - DISPOSAL CONSIDERATIONS

EPA Waste No.: None

DISPOSAL METHOD: Place in separate, appropriate, closed container in accordance with all applicable local, State, and Federal regulations. This material has NOT been tested by Toxicity Characteristic Leaching Procedure (TCLP).

SECTION 14 - TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Paint

DOT HAZARD CLASS: NA HAZARD SUBCLASS: NA

DOT UN/NA NUMBER: N/A IMO: NA PACKING GROUP : NA

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: AS FOLLOWS -

SECTION 15 - REGULATORY INFORMATION

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

NEW JERSEY RIGHT-TO-KNOW:
The following materials are non-hazardous, but are among the top five components in this product:

---------- CHEMICAL NAME ---------- CAS NUMBER
No non-hazardous materials are among the top five ingredients.

PENNSYLVANIA RIGHT-TO-KNOW:
The following non-hazardous ingredients are present in the product at greater than 3%:

---------- CHEMICAL NAME ---------- CAS NUMBER
No non-hazardous ingredients are present at greater than 3%.

INTERNATIONAL REGULATIONS: AS FOLLOWS -

CANADIAN WHMIS: This MSDS has been prepared in compliance with Controlled Product Regulations except for use of the 16 headings.

CANADIAN WHMIS CLASS: No information available.

SECTION 16 - OTHER INFORMATION

NOTICE: Removal of old lead paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-424-LEAD.

AMERON
Coatings

M. S. D. S.
Material Safety Data Sheet

700C00000

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : PSX 700 CURE
IDENTIFICATION NUMBER: 700C00000
PRODUCT CLASS : ENGINEERED SILOXANE; PATENTS - 5,618,860 & 5,275,645
HEALTH : DANGER HMIS/NFPA : H3F1R0

Ameron International
Protective Coatings Group
201 North Berry St.
Brea, CA 92821

EMERGENCY:800-424-9300 (ChemTrec)
24 Hours Emergency Hotline

INFORMATION: William B. Dances, PHONE: 714-529-1951 PREPARE DATE: 04/26/02
PREVIOUS REVISION DATE: 04/26/02

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT % LESS THAN
01	PROPRIETARY (Methyl alcohol exposure 200ppm (S), STEL 250ppm)	PROPRIETARY	55.0 %
02	PROPRIETARY (Can generate methanol on contact with water or humid air, STEL 250ppm)	PROPRIETARY	45.0 %
03	PROPRIETARY (As tin STEL 0.2mg/m3)	PROPRIETARY	10.0 %

EXPOSURE LIMITS

	ACGIH		OSHA		VP	TOXICITY	
	TLV-TWA	TLV-TWA	PEL-TWA	PEL-TWA	mmHg	LD50	LC50
ITEM	ppm	Mg/M3	ppm	Mg/M3	@68F	g/kg	ppm
01	dna	dna	dna	dna	N.A.	dna	dna
02	dna	dna	dna	dna	N.A.	dna	dna
03	dna	0.1	dna	0.1(S)	N.A.	2.300	dna

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

REGULATORY: All ingredients are on TSCA inventory or are exempt. Toxic chemicals marked (SARA, CERCLA, HAPs) are subject to reporting requirements of SARA (40CFR 355 and 372), CERCLA (40CFR 302), or HAPs (40CFR 63).

(S)=Skin; LD50=Dermal.rabbit; LC50=Inhalation,rat; dna=data not available; na=not applicable

SECTION 3 - HAZARDS IDENTIFICATION

EXPOSURE EFFECTS: Vapor or spray mist or spattered material can be harmful. Irritating to eyes, skin, and if inhaled; to nose and throat. Excessive or prolonged inhalation can cause headache, nausea or dizziness.

OVER-EXPOSURE (prolonged or repeated use): CAN AGGRAVATE OR ACCENTUATE ANY OF THESE EFFECTS.

SKIN: Severe irritant. Severe burns. Sensitization or allergic reaction, such as rash or hives. Can be absorbed through skin. Can cause defatting and drying of skin.

INHALATION: Severe irritant. Lung injury. Respiratory sensitization and allergic reaction such as asthma. High vapor concentrations may cause drowsiness.

EYES: Severe irritant. Corneal injury. Irreversible burns and damage. Methanol, if swallowed, can cause eye damage and blindness.

INGESTION: Can be fatal if swallowed.

TARGET ORGANS: Kidneys. Liver. Skin. Eyes. Stomach. Central nervous system.

MEDICAL CONDITIONS AGGRAVATED: Kidneys. Liver. Skin. Eyes. Respiratory. Allergies.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT INHALATION INGESTION EYE CONTACT

SECTION 4 - FIRST AID MEASURES

FIRST AID PROCEDURES: INHALATION: Remove to fresh air. Restore normal breathing. Treat symptomatically. See physician. SKIN: Wash thoroughly with soap and water. Remove contaminated clothing.Consult physician if irritation persists. EYES: Flush immediately with plenty of water for at least 15 minutes and get medical attention. INGESTION: Drink 1 or 2 glasses of water to dilute. Never give anything by mouth to an unconscious person.

SECTION 4 - FIRST AID MEASURES

Do not induce vomiting. Consult physician or poison control center IMMEDIATELY. Treat symptomatically. EYES: After flushing eyes for 15 minutes, get IMMEDIATE medical attention from an ophthalmologist.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 205 F (SETA) LOWER EXPLOSIVE LIMIT: N.A.
UPPER EXPLOSIVE LIMIT: N.A.

FLAMMABILITY - OSHA: COMBUSTIBLE - CLASS IIIB
DOT: NOT REGULATED

EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL

LOWEST FLASHING SOLVENT:

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers may explode when exposed to extreme heat and pressure buildup.

FIREFIGHTING PROCEDURES: Wear full protective equipment, self-contained breathing apparatus. Water may be used to cool closed containers to prevent

pressure build-up or explosion when exposed to extreme heat.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL, LEAKS: Ventilate area. Use inert, absorbent cleanup materials. (DO NOT use sawdust.) Place in separate container. Keep out of sewers and waterways. If entry is threatened or occurs, notify local authorities.

SECTION 7 - HANDLING AND STORAGE

HANDLING AND STORAGE: Keep container closed, upright when not in use. Store in cool, dry, well-ventilated area. Avoid prolonged storage temperatures above 100F. Use caution when pouring. Avoid breathing sanding dust. Do not weld or flame cut on empty container. Material is hygroscopic, keep containers tightly sealed.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Implement administrative and engineering controls to reduce exposure. Provide sufficient ventilation in volume and pattern to keep air contaminant concentrations below the TLV limits. Remove welding or flame cutting decomposition products; follow current,ANSI Z49.1,"Safety in

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Welding and Cutting". Refer to 29 CFR parts 1910 and 1915, for coating operations; part 1910.146, Confined Spaces.

RESPIRATORY PROTECTION: Wear NIOSH/MSHA certified respirator designed to remove a combination of particulates (dust or spray mist) and vapor. When brushing, rolling or spreading; select the appropriate respiratory protection for the conditions. For specific conditions, refer to current "NIOSH Pocket Guide to Chemical Hazards". In confined or restricted ventilation areas use air-line respirators or hoods. Refer to 29 CFR, OSHA parts 1910.134 and 1915 for coating operations;part 1910.146 Confined Spaces;ANSI Z88.2,Practices for Respiratory Protection; 42 CFR, part 84 Particulate Respirators.

PROTECTIVE CLOTHING AND EQUIPMENT: Dependent upon application method, wear
resistant coveralls, gloves and shoe coverings to prevent skin contact. Wear solvent resistant glasses with splash guards or face shield to protect eyes from splash, spatter and/or spray mist.Consult 29 CFR 1910.132, 133, 136, 138; ANSI Z87.1, Z41.

HYGIENIC PRACTICES: Wash thoroughly after handling and before eating,

smoking or using toilet. Launder contaminated clothing before use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE : 212 - 212 F VAPOR DENSITY : Is heavier than air
ODOR : NA WEIGHT PER GAL : 9.1969
APPEARANCE : LIQUID EVAPORATION RATE: Is slower than Butyl
SOLUBILITY IN H2O : NO Acetate
EPA MIXED VOC, G/L: 120 EPA MIXED THIN VOC, G/L : 204
THINNER : @ 0.0 pints PHOTOCHEMICALLY REACTIVE: No
VOLATILE VOLUME % : 0.00

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Heat, open flame, arc or sparks. Water or moisture.

INCOMPATIBILITY: Strong oxidizers, acids and alkalies. Water.

HAZARDOUS DECOMPOSITION PRODUCTS: (BY FIRE, BURNING OR WELDING); CO, CO2.
NOx. Aldehydes. Silicon oxide fumes. Methanol. Toxic gases or fumes. Formaldehyde at temperatures above 300F (150C). Tin compound fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

SECTION 11 - TOXICOLOGICAL PROPERTIES

TOXICOLOGICAL PROPERTIES: See Section 2.

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: No Information.

SECTION 13 - DISPOSAL CONSIDERATIONS

EPA Waste No.: None

DISPOSAL METHOD: Place in separate, appropriate, closed container in accordance with all applicable local, State, and Federal regulations. This material has NOT been tested by Toxicity Characteristic Leaching Procedure (TCLP).

SECTION 14 - TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Paint

DOT HAZARD CLASS: 8 HAZARD SUBCLASS: MP

DOT UN/NA NUMBER: 3066 IMO: NA PACKING GROUP : II

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: AS FOLLOWS -

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

NEW JERSEY RIGHT-TO-KNOW:
The following materials are non-hazardous, but are among the top five components in this product:

---------- CHEMICAL NAME ---------- CAS NUMBER
No non-hazardous materials are among the top five ingredients.

PENNSYLVANIA RIGHT-TO-KNOW:
The following non-hazardous ingredients are present in the product at greater than 3%:

---------- CHEMICAL NAME ---------- CAS NUMBER
No non-hazardous ingredients are present at greater than 3%.

SECTION 15 - REGULATORY INFORMATION

INTERNATIONAL REGULATIONS: AS FOLLOWS -

CANADIAN WHMIS: This MSDS has been prepared in compliance with Controlled Product Regulations except for use of the 16 headings.

CANADIAN WHMIS CLASS: No information available.

SECTION 16 - OTHER INFORMATION

NOTICE: Removal of old lead paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH

approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-424-LEAD.

product data

carboline®

Carboxane® 950

(Formerly 2434 VOC Series)

Selection & Specification Data

Generic Type
Fluorourethane

Description
Premium, ultra-durable ambient cured finish meeting AAMA 605.2 performance requirements. 950 is a VOC-compliant coating that provides unparalleled color and gloss retention and exterior weathering characteristics. Available in gloss and satin finishes as well as metallic finishes with clear coats, 950 offers a level of durability for field application previously not available in the construction industry. Also can be applied directly to aged PVDF finishes.

Features
- Ambient temperature cure; no heat cure required
- Meets AAMA 605.2 requirements (industry standard for PVDF finishes)
- Exceptional weatherability
- Available in a variety of Carboline colors
- Excellent flow characteristics allow for application by spray or roller
- Excellent graffiti resistance
- VOC compliant to current AIM regulations

Color
Refer to Carboline Color Guide. Certain colors may require multiple coats for hiding.

Finish
950: Gloss or Satin
950 Clear: Gloss or Satin
950 Metallic:* Satin
* Color variations within a batch and batch-to-batch may occur due to the metallic pigments and variations in application techniques and conditions.

Primers
Refer to *Substrates & Surface Preparation*

Topcoats
950 Clear for metallic finishes and certain accent colors

Dry Film Thickness
2.0-3.0 mils (50-75 microns)
2.0 mils (50 microns) for Clear Coats and Metallics

Solids Content
By Volume: 38% ± 2% (950)
34% ± 2% (950 Clear)
35% ± 2% (950 Metallic)

Theoretical Coverage Rate
609 mil ft^2 (15.0 m^2/l at 25 microns)
Allow for loss in mixing and application.

VOC Values
As supplied:
2.5 lbs./gal (300 g/l) 950 and 950 Metallic
2.1 lbs./gal (250 g/l) 950 Clear Coat
EPA Method 24:
3.5 lbs./gal (420 g/l) 950 and 950 Metallic
3.3 lbs./gal (396 g/l) 950 Clear Coat
(Calculated minus water and exempt solvents.)
These are nominal values and may vary slightly with color. Solvents exempt from VOC reporting are in this product. For thinned VOC information please contact Carboline Technical Service.

Dry Temp. Resistance
Continuous: 200°F (93°C)
Non-Continuous: 250°F (121°C)
Slight discoloration and loss of gloss is observed above 200°F (93°F).

* The alignment of aluminum flakes in aluminum-filled finishes is very dependent on application conditions and techniques. Care must be taken to keep conditions as constant as possible to reduce variations in final appearance. It is also advisable to work from a single batch of material since variations can occur from batch to batch. For more information consult Carboline Technical Service Department.

Substrates & Surface Preparation

General
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel
Prime with specific Carboline primers as recommended by your Carboline Sales Representative.

Galvanized Steel
Prime with specific Carboline primers as recommended by your Carboline Sales Representative.

Aluminum
Prime with specific Carboline primers as recommended by your Carboline Sales Representative.

Aged PVDF Finishes
SSPC-SP1
(A test patch adhesion check is recommended.)

Other Aged Finishes
Must attain a minimum 3B rating in accordance with ASTM D3359 “X-Scribe” adhesion test. Prime with specific Carboline primers as recommended by your Carboline Sales Representative.

Performance Data

Test Method	System	Results	Report #
AAMA 605.2 Paragrah 7.4 Adhesion	Blasted Steel 1 ct. Epoxy 1 ct. 950	Passes Wet, Dry and Boiling Water Adhesion Tests	03245
ASTM D4541 Adhesion	Blasted Steel 1 ct. Epoxy 1 ct. 950	1585 psi (Pneumatic)	08975
ASTM D3359 Adhesion	Aged Kynar 1 ct. 950	5A	09337
AAMA 605.2 Paragraph 7.7 Chemical Resistance	Blasted Steel 1 ct. Epoxy 1 ct. 950	Passes Tests for Muriatic Acid, Nitric Acid, Mortar Resistance and Detergent Resistance	03245
ASTM D4585 Humidity Resistance	Blasted Steel 1 ct. Zinc 1 ct. Epoxy 1 ct. 950	No effect on coated surface after 3000 hours exposure	03245
AAMA 605.2 Paragraph 7.3 Hardness	Blasted Steel 1 ct. Epoxy 1 ct. 950	Pass. 3H exceeds F hardness requirements. No rupture of film	03245
ASTM B117 Salt Fog	Blasted Steel 1 ct. Zinc 1 ct. Epoxy 1 ct. 950	No effect on plane area; less than 1/32" undercutting at scribe after 3000 hours	03245
AAMA 605.2 Paragraph 7.5 Impact Resistance	Aluminum 1 ct. 950	Pass. No delamination after tape pull following 0.1 inch minimum deformation	03245
Graffiti Resistance	Blasted Steel 1 ct. Zinc 1 ct. Epoxy 1 ct. 950	Complete removal and no stain from all spray paints, crayons, lipstick, shoe polish, and marker	03245
EMMAQUA	Blasted Steel 1 ct. Zinc 1 ct. Epoxy 1 ct. 950	Greater than 90% gloss retention after 1252 JM/m^2 UV exposure	09264

Test reports and additional data available upon written request.

April 2003 replaces July 2001

1335

Carboxane® 950

Application Equipment

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

General Guidelines:

Spray Application (General) The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio:	30:1 (min.)*
GPM Output:	3.0 (min.)
Material Hose:	3/8" I.D. (min.)
Tip Size:	.013-.017"
Output PSI:	2000-2300
Filter Size:	60 mesh

*Teflon packings are recommended and available from the pump manufacturer.

Brush Recommended for touch-up only. Use a medium bristle brush. Do not use for metallic finishes.

Roller Consult Carboline Technical Service for specific recommendations. A minimum of two coats may be required to attain desired appearance, hiding and recommended dry film thickness.

Mixing & Thinning

Mixing Power mix Part A, then combine and power mix to a uniform consistency. DO NOT MIX PARTIAL KITS.

Ratio 3.2 Gal. Kit: (3 gal. Part A: 0.2 gal. Part B)
1 Gal Kit: (.94 gal. Part A: .06 Part B)

Thinning

Spray:	Up to 7 oz/gal (5.5%) w/ #25
Spray:	Up to 8 oz/gal (6%) w/ #214 for hot, windy conditions.
Roller:	Up to 8 oz/gal (6%) w/ #234. Shake Thinner #234 well before using. Do not exceed 6% by volume.

Refer to VOC data regarding thinning limitations for 950 Clear and Metallic. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life 4 Hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use. THIS PRODUCT IS MOISTURE SENSITIVE. AVOID MOISTURE CONTAMINATION.

Cleanup & Safety

Cleanup Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.

Cleanup & Safety Cont.

Caution This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	60°-85°F (16°-29°C)	60°-85°F (16°-29°C)	60°-85°F (16°-29°C)	40-60%
Minimum	50°F (10°C)	40°F (4°C)	40°F (4°C)	0%
Maximum	100°F (38°C)	120°F (49°C)	95°F (35°C)	80%

Industry standards are for substrate temperatures to be above 5°F (3°C) the dew point. Special application techniques may be required above or below normal application conditions.

Caution: Product is moisture sensitive. Application and/or curing in humidifies above maximum, or exposure to moisture from rain or dew may result in a loss of gloss and/or microbubbling of the product.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Handle	Dry to Recoat or Topcoat with 950 Clear Coat	Final Cure
50°F (10°C)	6 Hours	6 Hours	24 Hours
75°F (24°C)	3 Hours	3 Hours	20 Hours
90°F (32°C)	2 Hours	2 Hours	16 Hours

These times are based on a 2.0-3.0 mil (50-75 micron) dry film thickness for 950. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.

Packaging, Handling & Storage

Shipping Weight (950)	1 Gallon Kit 13 lbs (6 kg)	3.2 Gallon Kit 38 lbs (17 kg)
Shipping Weight (950 Clear & Metallic)	1 Gallon Kit 12 lbs (5 kg)	3.2 Gallon Kit 35 lbs (16 kg)

Flash Point (Setaflash)

950 Part A:	87°F (31°C)
950 Clear Part A:	87°F (31°C)
950 Metallic Part A:	83°F (29°C)
Part B (for all):	106°F (41°C)

Storage (General) Store Indoors.

Storage Temperature & Humidity 40° – 110°F (4-43°C)
0°-80% Relative Humidity

Shelf Life:

950 Gloss/Satin	Part A: Min. 36 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C)
950 Clear Gloss	Part A: Min. 36 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C)
950 Clear Satin	Part A: 24 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C)
950 Metallic	Part A: Min. 24 months at 75°F (24°C) Part B: Min. 24 months at 75°F (24°C)

***Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.**

carboline®

350 Hanley Industrial Court, St. Louis, MO 63144-1599
314/644-1000 314/644-4617 (fax) www.carboline.com

An RPM Company

April 2003 replaces July 2001

350 Hanley Industrial Court
St. Louis, MO 63144
(314) 644-1000 Phone
(314) 644-4617 Fax

Carboline Customer Service Department

1-888-Carboline Phone
(314) 644-4684 Fax

Technical Service Department

(314) 644-1000 Phone
(314) 644-6883 Fax

SECTION I - PRODUCT: CARBOXANE 950 PART A (1335A1NL)
Date: 12/14/99 Replaces 04/05/99
(aka CARBOLINE 2434 VOC PART A)
CHEMTREC TRANSPORTATION EMERGENCY PHONE NO.: 800-424-9300
PITTSBURGH POISON CONTROL CENTER HEALTH EMERGENCY NO.: 412-681-6669

SECTION II - HAZARDOUS INGREDIENTS EXPOSURE LIMITS

CHEMICAL NAME	(A)	(B)	(C)	(D)	(E)
PCBTF	98-56-6	30%	NE	NE	NE
COLOR PIGMENT	MIXTURE	20%	3.5MG/M3	NE	NE
XYLENE	1330-20-7	20%	100 PPM	150 PPM	NE
ETHYL BENZENE	100-41-4	10%	100 PPM	125 PPM	NE
METHYL N-AMYL KETONE	110-43-0	5%	50 PPM	100 PPM	NE

HAZARDOUS INGREDIENTS ADDITIONAL DATA

CHEMICAL NAME	(F)	(G)
PCBTF	>2.7 G/KG RABBIT 4479 PPM	NO/NO/2,3
COLOR PIGMENT	NOT AVAILABLE	NO/YES
XYLENE	4300MG/KG RAT,ORAL 15000 PPM/4HRS RAT,INHALATION	NO/YES/1,2,3/ 1000#/U239
ETHYL BENZENE	NOT AVAILABLE	NO/YES/1,2,3/ 1000#
METHYL N-AMYL KETONE	1670 MG/KG RAT ORAL 12.6 ML/KG RABBIT DERMAL	NO/NO/1,2,3

TABLE (A) CAS NUMBER (B) LESS THAN WT (C) TLV-TWA (D) STEL (E) CEILING (F) TOXICITY DATA (LD50/Route,LC50/Route) (G) SARA 302/SARA 313/ SARA 311-312 CATEGORIES/CERCLA. NE = not established, NR = not required, NO = no. Color Pigment Mixture may contain Iron Oxides, Titanium Dioxide, Carbon Black, and other particulates not otherwise regulated in varying amounts depending on color of product.

WHMIS CLASSIFICATION: B2 -- D2B
HMIS/NFPA CLASSIFICATION: HEALTH 2, FLAMMABILITY 3, REACTIVITY 1, PERSONAL PROTECTION CODE G, NFPA FIRE FIGHTING PHASE 4

SECTION III - PHYSICAL DATA:

BOILING RANGE: 277F(136C)-300F(148C). VAPOR DENSITY: Heavier than air. EVAPORATION RATE: Slower than ether. VOLATILE BY WEIGHT 52 %. VOLATILE BY VOLUME: 66 %. PRODUCT WT/GAL: 11.3 LBS/U.S.GAL. 1.35 sp gr.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

FLAMMABILITY CLASSIFICATION: FLASH POINT: 87 F(30C) (Setaflash) LEL 0.9 % UEL 10.5 %.
OSHA-FLAMMABLE LIQUID/OSHA/CLASS/1C, DOT-PAINT,3,UN1263,PGIII, CANADIAN TDGA: PAINT,3,UN1263,PGIII
EXTINGUISHING MEDIA: Dry Chemical, Foam, Carbon Dioxide, Water Fog.
FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and will accumulate.

PRODUCT: CARBOXANE 950 PART A (1335A1NL)
Date: 12/14/99 Replaces 04/05/99

Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use nonferrous tools and to wear conductive and non-sparking shoes.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.

SECTION V - HEALTH HAZARD DATA:

INHALATION: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache or nausea. May cause nose and throat irritation.
CONTACT: May cause eye irritation. May cause skin irritation.
NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: If you have a condition that could be aggravated by exposure to dust or organic vapors see a physician prior to use.
PRIMARY ROUTE(S) OF ENTRY: Inhalation, Dermal, Ingestion.
EMERGENCY FIRST AID PROCEDURES: When exposed always get medical attention.
EYE CONTACT: Flush with water for 15 minutes.
SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and clean before reuse.
INHALATION: Remove to fresh air. Provide oxygen if breathing is difficult. Use artificial respiration if not breathing. Get medical attention.
IF SWALLOWED: DO NOT INDUCE VOMITING!! Always get medical attention.

SECTION VI - REACTIVITY DATA:

STABILITY: This product is stable under normal storage conditions.
HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.
CONDITIONS TO AVOID: Heat, sparks, and open flames.
INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

SECTION VII - SPILL OR LEAK PROCEDURES:

STEPS TO BE TAKEN IN CASE OF SPILL: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and equipment. Follow safe handling and use guidelines in Section VIII. Contain

and soak up residual with an absorbent (clay or sand). Take up absorbent material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section II for Sara Title III and CERCLA information.

SECTION VIII - SAFE HANDLING AND USE INFORMATION:

RESPIRATORY PROTECTION: Use only with ventilation to keep levels below exposure guidelines. (Section II). User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use.
VENTILATION: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).
SKIN AND EYE PROTECTION: Recommend impervious gloves, clothing and safety glasses with side shields or chemical goggles to avoid skin and eye contact. If material penetrates to skin, change gloves and clothing. Hypersensitive persons should wear gloves or use protective cream.
HYGIENIC PRACTICES: Wash with soap and water before eating, drinking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and pass through hazardous materials. Check shoes carefully after soaking before reuse.
APPLICATION: Use only in accordance with Carboline application instructions, container label and Product Data Sheet.

SECTION IX - SPECIAL PRECAUTIONS:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep away from heat, sparks, open flame, and strong oxidizing agents. Keep containers closed. Store in cool, dry place with adequate ventilation. If pouring or transferring materials, ground all containers and tools.
OTHER PRECAUTIONS: Do not weld, heat, cut or drill on full or empty containers.

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Carboline Company 350 Hanley Ind. Ct. St. Louis, MO 63144
PHONE NO. 314-644-1000 FOR INDUSTRIAL USE ONLY

SPECIFIC STATE REGULATORY INFORMATION

NEW JERSEY
PENNSYLVANIA
Non-Hazardous Materials above 1 Percent:

Name	CAS	Pct
FLUOROPOLYMER	NA	30%

CALIFORNIA

WARNING: This product contains a chemical(s) known to the State of California to cause cancer, and birth defects or other reproductive harm.

SECTION I - PRODUCT: URETHANE CONVERTER 811 (0856B1NL)
Date: 04/28/03 Replaces 02/28/01

CHEMTREC TRANSPORTATION EMERGENCY PHONE NO.: 800-424-9300
PITTSBURGH POISON CONTROL CENTER HEALTH EMERGENCY NO.: 412-681-6669

SECTION II - HAZARDOUS INGREDIENTS EXPOSURE LIMITS

CHEMICAL NAME	(A)	(B)	(C)	(D)	(E)
POLYMERIC HDI	28182-81-2	90%	NE	NE	NE
AROMATIC SOLVENT	64742-95-6	5%	25PPM	NE	NE
BUTYL ACETATE	123-86-4	5%	150 PPM	200 PPM	NE
HDI ISOCYANATE	822-06-0	1%	0.005PPM	0.02PPM	NE

HAZARDOUS INGREDIENTS ADDITIONAL DATA

CHEMICAL NAME	(F)	(G)
POLYMERIC HDI	>5,000 MG/KG RAT ORAL 137-1150 MG/M3 4 HOURS; RAT	NO/NO/1,2,3,5
AROMATIC SOLVENT	4700MG/KG RAT,ORAL 3670PPM/8HRS RAT,INHALATION	NO/YES/1/2/3
BUTYL ACETATE	7.4 G/KG RABBIT ORAL >1800 PPM/6H INHALATION	NO/NO/1,2,3
HDI ISOCYANATE	710MG/KG ORAL 570MG/KG DERMAL 23PPM 4 HRS	NO/NO

TABLE (A) CAS NUMBER (B) LESS THAN WT (C) TLV-TWA (D) STEL (E) CEILING (F) TOXICITY DATA (LD50/Route,LC50/Route) (G) SARA 302/SARA 313/ SARA 311-312 CATEGORIES/CERCLA. NE = not established, NR = not required, NO = no. Color Pigment Mixture may contain Iron Oxides, Titanium Dioxide, Carbon Black, and other particulates not otherwise regulated in varying amounts depending on color of product.

WHMIS CLASSIFICATION: B3 -- D2A -- D2B
HMIS/NFPA CLASSIFICATION: HEALTH 3, FLAMMABILITY 2, REACTIVITY 1, PERSONAL PROTECTION CODE G, NFPA FIRE FIGHTING PHASE 4

SECTION III - PHYSICAL DATA:

BOILING RANGE: 252F(122C)-355F(179C). VAPOR DENSITY: Heavier than air. EVAPORATION RATE: Slower than ether. VOLATILE BY WEIGHT 10 %. VOLATILE BY VOLUME: 13 %. PRODUCT WT/GAL: 9.4 LBS/U.S.GAL. 1.12 sp gr.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

FLAMMABILITY CLASSIFICATION: FLASH POINT: 133 F(56C) (Setaflash) LEL 1.0 % UEL 10.4 %.
OSHA-COMBUSTIBLE/LIQUID/OSHA/CLASS/II, DOT-PAINT,3,UN1263,PGIII, CANADIAN TDGA: PAINT,3,UN1263,PGIII
EXTINGUISHING MEDIA: Dry Chemical, Foam, Carbon Dioxide, Water Fog.
FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to

keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use nonferrous tools and to wear conductive and non-sparking shoes.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.

SECTION V - HEALTH HAZARD DATA:

INHALATION: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache or nausea. May cause nose and throat irritation. May cause lung irritation. Contains HEXAMETHYLENE DIISOCYANATE which may cause allergic respiratory reaction, effects may be permanent.
CONTACT: May cause eye irritation. May cause skin irritation. May cause allergic skin reaction.
NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: If sensitized to isocyanates or other chemicals do not use. See a physician if a medical condition exists.
PRIMARY ROUTE(S) OF ENTRY: Inhalation, Dermal, Ingestion.
EMERGENCY FIRST AID PROCEDURES: When exposed always get medical attention.
EYE CONTACT: Flush with water for 15 minutes.
SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and clean before reuse.
INHALATION: Remove to fresh air. Provide oxygen if breathing is difficult. Use artificial respiration if not breathing. Get medical attention.
IF SWALLOWED: DO NOT INDUCE VOMITING!! Always get medical attention.

SECTION VI - REACTIVITY DATA:

STABILITY: This product is stable under normal storage conditions.
HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.
CONDITIONS TO AVOID: Heat, sparks, and open flames.
INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

SECTION VII - SPILL OR LEAK PROCEDURES:

STEPS TO BE TAKEN IN CASE OF SPILL: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and

equipment. Follow safe handling and use guidelines in Section VIII. Contain and soak up residual with an absorbent (clay or sand). Take up absorbent material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section II for Sara Title III and CERCLA information.

SECTION VIII - SAFE HANDLING AND USE INFORMATION:

RESPIRATORY PROTECTION: Use only with ventilation to keep levels below exposure guidelines. (Section II). User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor, use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use.
VENTILATION: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL) .
SKIN AND EYE PROTECTION: Recommend impervious gloves, clothing and safety glasses with side shields or chemical goggles to avoid skin and eye contact. If material penetrates the skin, change gloves and clothing. Hypersensitive persons should wear gloves or use protective cream.
HYGIENIC PRACTICES: Wash with soap and water before eating, drinking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and pass through hazardous materials. Check shoes carefully after soaking before reuse.
APPLICATION: Use only in accordance with Carboline application instructions, container label and Product Data Sheet.

SECTION IX - SPECIAL PRECAUTIONS:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep away from heat, sparks, open flame, and strong oxidizing agents. Keep containers closed. Store in cool, dry place with adequate ventilation. If pouring or transferring materials, ground all containers and tools.
OTHER PRECAUTIONS: Do not weld, heat, cut or drill on full or empty containers.

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Carboline Company 350 Hanley Ind. Ct. St. Louis, MO 63144
PHONE NO. 314-644-1000 FOR INDUSTRIAL USE ONLY

SPECIFIC STATE REGULATORY INFORMATION

NEW JERSEY
PENNSYLVANIA
Non-Hazardous Materials above 1 Percent:

Name	CAS	Pct
No materials meet this criteria		

CALIFORNIA

WARNING: This product contains a chemical(s) known to the State of California to cause cancer, and birth defects or other reproductive harm.

SECTION I - PRODUCT: CARBOXANE 950 MIXED OXIDE PT A (1335A1YL)
Date: 12/27/99

CHEMTREC TRANSPORTATION EMERGENCY PHONE NO.: 800-424-9300
PITTSBURGH POISON CONTROL CENTER HEALTH EMERGENCY NO.: 412-681-6669

SECTION II - HAZARDOUS INGREDIENTS EXPOSURE LIMITS

CHEMICAL NAME	(A)	(B)	(C)	(D)	(E)
PCBTF	98-56-6	35%	NE	NE	NE
XYLENE	1330-20-7	20%	100 PPM	150 PPM	NE
ETHYL BENZENE	100-41-4	10%	100 PPM	125 PPM	NE
BARIUM SULFATE	7727-43-7	10%	10mg/m3	NE	NE
MIXED METAL OXIDES	MIXTURE	10%	0.5MG.M3	NE	NE
COLOR PIGMENT	MIXTURE	5%	3.5MG/M3	NE	NE
METHYL N-AMYL KETONE	110-43-0	5%	50 PPM	100 PPM	NE

HAZARDOUS INGREDIENTS ADDITIONAL DATA

CHEMICAL NAME	(F)	(G)
PCBTF	>2.7 G/KG RABBIT 4479 PPM	NO/NO/2,3
XYLENE	4300MG/KG RAT,ORAL 15000 PPM/4HRS RAT,INHALATION	NO/YES/1,2,3/ 1000#/U239
ETHYL BENZENE	NOT AVAILABLE	NO/YES/1,2,3/ 1000#
BARIUM SULFATE	NOT AVAILABLE	NO/NO
MIXED METAL OXIDES	>10,000MG/KG ORAL NE	NO/YES
COLOR PIGMENT	NOT AVAILABLE	NO/YES
METHYL N-AMYL KETONE	1670 MG/KG RAT ORAL 12.6 ML/KG RABBIT DERMAL	NO/NO/1,2,3

TABLE (A) CAS NUMBER (B) LESS THAN WT (C) TLV-TWA (D) STEL (E) CEILING (F) TOXICITY DATA (LD50/Route,LC50/Route) (G) SARA 302/SARA 313/ SARA 311-312 CATEGORIES/CERCLA. NE = not established, NR = not required, NO = no. Color Pigment Mixture may contain Iron Oxides, Titanium Dioxide, Carbon Black, and other particulates not otherwise regulated in varying amounts depending on color of product.

WHMIS CLASSIFICATION: B2 -- D2A -- D2B
HMIS/NFPA CLASSIFICATION: HEALTH 2, FLAMMABILITY 3, REACTIVITY 1, PERSONAL PROTECTION CODE G, NFPA FIRE FIGHTING PHASE 4

SECTION III - PHYSICAL DATA:

BOILING RANGE: 277F(136C)-300F(148C). VAPOR DENSITY: Heavier than air. EVAPORATION RATE: Slower than ether. VOLATILE BY WEIGHT 55 %. VOLATILE BY VOLUME: 67 %. PRODUCT WT/GAL: 11.0 LBS/U.S.GAL. 1.32 sp gr.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

FLAMMABILITY CLASSIFICATION: FLASH POINT: 87 F(30C) (Setaflash) LEL 0.9 %

PRODUCT: CARBOXANE 950 MIXED OXIDE PT A (1335A1YL)
Date: 12/27/99

UEL 10.5 %.
OSHA-FLAMMABLE LIQUID/OSHA/CLASS/1C, DOT-PAINT,3,UN1263,PGIII, CANADIAN TDGA: PAINT,3,UN1263,PGIII
EXTINGUISHING MEDIA: Dry Chemical, Foam, Carbon Dioxide, Water Fog.
FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use nonferrous tools and to wear conductive and non-sparking shoes.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.

SECTION V - HEALTH HAZARD DATA:

INHALATION: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache or nausea. May cause nose and throat irritation.
CONTACT: May cause eye irritation. May cause skin irritation.
NOTICE: Contains MIXED METAL OXIDE PIGMENTS which are the result of high temperature calcination of the component substances. Due to the resultant unique crystalline structure the properties of this finished pigment do not necessarily reflect the properties of the component metals or oxides. Some compounds of the metals used in the manufacturing of this pigment have demonstrated various toxic properties. However, there is no evidence that this pigment has these toxic characteristics. IARC considers nickel compounds to be carcinogenic to humans (Monograph #49). IARC has classified cobalt and cobalt compounds as possibly carcinogenic to humans (Class 2B Monograph #52) Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: If you have a condition that could be aggravated by exposure to dust or organic vapors see a physician prior to use.
PRIMARY ROUTE(S) OF ENTRY: Inhalation, Dermal, Ingestion.
EMERGENCY FIRST AID PROCEDURES: When exposed always get medical attention.
EYE CONTACT: Flush with water for 15 minutes.
SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and clean before reuse.
INHALATION: Remove to fresh air. Provide oxygen if breathing is difficult. Use artificial respiration if not breathing. Get medical attention.
IF SWALLOWED: DO NOT INDUCE VOMITING!! Always get medical attention.

SECTION VI - REACTIVITY DATA:

STABILITY: This product is stable under normal storage conditions.

PRODUCT: CARBOXANE 950 MIXED OXIDE PT A (1335A1YL)
Date: 12/27/99

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.
CONDITIONS TO AVOID: Heat, sparks, and open flames.
INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

SECTION VII - SPILL OR LEAK PROCEDURES:

STEPS TO BE TAKEN IN CASE OF SPILL: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and equipment. Follow safe handling and use guidelines in Section VIII. Contain and soak up residual with an absorbent (clay or sand). Take up absorbent material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section II for Sara Title III and CERCLA information.

SECTION VIII - SAFE HANDLING AND USE INFORMATION:

RESPIRATORY PROTECTION: Use only with ventilation to keep levels below exposure guidelines. (Section II). User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use.
VENTILATION: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).
SKIN AND EYE PROTECTION: Recommend impervious gloves, clothing and safety glasses with side shields or chemical goggles to avoid skin and eye contact. If material penetrates to skin, change gloves and clothing. Hypersensitive persons should wear gloves or use protective cream.
HYGIENIC PRACTICES: Wash with soap and water before eating, drinking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and pass through hazardous materials. Check shoes carefully after soaking before reuse.
APPLICATION: Use only in accordance with Carboline application instructions, container label and Product Data Sheet.

SECTION IX - SPECIAL PRECAUTIONS:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep away from heat, sparks, open flame, and strong oxidizing agents. Keep containers closed. Store in cool, dry place with adequate ventilation. If pouring or transferring materials, ground all containers and tools.
OTHER PRECAUTIONS: Do not weld, heat, cut or drill on full or empty containers.

PRODUCT: CARBOXANE 950 MIXED OXIDE PT A (1335A1YL)
Date: 12/27/99

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Carboline Company 350 Hanley Ind. Ct. St. Louis, MO 63144
PHONE NO. 314-644-1000 FOR INDUSTRIAL USE ONLY

CARBOLINE CO. MATERIAL SAFETY DATA SHEET
PRODUCT: CARBOXANE 950 MIXED OXIDE PT A (1335A1YL)
Date: 12/27/99

SPECIFIC STATE REGULATORY INFORMATION

NEW JERSEY
PENNSYLVANIA
Non-Hazardous Materials above 1 Percent:

Name	CAS	Pct
FLUOROPOLYMER	NA	30%

CALIFORNIA

WARNING: This product contains a chemical(s) known to the State of California to cause cancer, and birth defects or other reproductive harm.

SECTION I - PRODUCT: URETHANE CONVERTER 811 (0856B1NL)
Date: 04/28/03 Replaces 02/28/01

CHEMTREC TRANSPORTATION EMERGENCY PHONE NO.: 800-424-9300
PITTSBURGH POISON CONTROL CENTER HEALTH EMERGENCY NO.: 412-681-6669

SECTION II - HAZARDOUS INGREDIENTS EXPOSURE LIMITS

CHEMICAL NAME	(A)	(B)	(C)	(D)	(E)
POLYMERIC HDI	28182-81-2	90%	NE	NE	NE
AROMATIC SOLVENT	64742-95-6	5%	25PPM	NE	NE
BUTYL ACETATE	123-86-4	5%	150 PPM	200 PPM	NE
HDI ISOCYANATE	822-06-0	1%	0.005PPM	0.02PPM	NE

HAZARDOUS INGREDIENTS ADDITIONAL DATA

CHEMICAL NAME	(F)	(G)
POLYMERIC HDI	>5,000 MG/KG RAT ORAL 137-1150 MG/M3 4 HOURS; RAT	NO/NO/1,2,3,5
AROMATIC SOLVENT	4700MG/KG RAT,ORAL 3670PPM/8HRS RAT,INHALATION	NO/YES/1/2/3
BUTYL ACETATE	7.4 G/KG RABBIT ORAL >1800 PPM/6H INHALATION	NO/NO/1,2,3
HDI ISOCYANATE	710MG/KG ORAL 570MG/KG DERMAL 23PPM 4 HRS	NO/NO

TABLE (A) CAS NUMBER (B) LESS THAN WT (C) TLV-TWA (D) STEL (E) CEILING (F) TOXICITY DATA (LD50/Route,LC50/Route) (G) SARA 302/SARA 313/ SARA 311-312 CATEGORIES/CERCLA. NE = not established, NR = not required, NO = no. Color Pigment Mixture may contain Iron Oxides, Titanium Dioxide, Carbon Black, and other particulates not otherwise regulated in varying amounts depending on color of product.

WHMIS CLASSIFICATION: B3 -- D2A -- D2B
HMIS/NFPA CLASSIFICATION: HEALTH 3, FLAMMABILITY 2, REACTIVITY 1, PERSONAL PROTECTION CODE G, NFPA FIRE FIGHTING PHASE 4

SECTION III - PHYSICAL DATA:

BOILING RANGE: 252F(122C)-355F(179C). VAPOR DENSITY: Heavier than air. EVAPORATION RATE: Slower than ether. VOLATILE BY WEIGHT 10 %. VOLATILE BY VOLUME: 13 %. PRODUCT WT/GAL: 9.4 LBS/U.S.GAL. 1.12 sp gr.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

FLAMMABILITY CLASSIFICATION: FLASH POINT: 133 F(56C) (Setaflash) LEL 1.0 % UEL 10.4 %.
OSHA-COMBUSTIBLE/LIQUID/OSHA/CLASS/II, DOT-PAINT,3,UN1263,PGIII, CANADIAN TDGA: PAINT,3,UN1263,PGIII
EXTINGUISHING MEDIA: Dry Chemical, Foam, Carbon Dioxide, Water Fog.
FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to

keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use nonferrous tools and to wear conductive and non-sparking shoes.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.

SECTION V - HEALTH HAZARD DATA:

INHALATION: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache or nausea. May cause nose and throat irritation. May cause lung irritation. Contains HEXAMETHYLENE DIISOCYANATE which may cause allergic respiratory reaction, effects may be permanent.
CONTACT: May cause eye irritation. May cause skin irritation. May cause allergic skin reaction.
NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: If sensitized to isocyanates or other chemicals do not use. See a physician if a medical condition exists.
PRIMARY ROUTE(S) OF ENTRY: Inhalation, Dermal, Ingestion.
EMERGENCY FIRST AID PROCEDURES: When exposed always get medical attention.
EYE CONTACT: Flush with water for 15 minutes.
SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and clean before reuse.
INHALATION: Remove to fresh air. Provide oxygen if breathing is difficult. Use artificial respiration if not breathing. Get medical attention.
IF SWALLOWED: DO NOT INDUCE VOMITING!! Always get medical attention.

SECTION VI - REACTIVITY DATA:

STABILITY: This product is stable under normal storage conditions.
HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.
CONDITIONS TO AVOID: Heat, sparks, and open flames.
INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

SECTION VII - SPILL OR LEAK PROCEDURES:

STEPS TO BE TAKEN IN CASE OF SPILL: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and

equipment. Follow safe handling and use guidelines in Section VIII. Contain and soak up residual with an absorbent (clay or sand). Take up absorbent material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section II for Sara Title III and CERCLA information.

SECTION VIII - SAFE HANDLING AND USE INFORMATION:

RESPIRATORY PROTECTION: Use only with ventilation to keep levels below exposure guidelines. (Section II). User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor, use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use.
VENTILATION: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL) .
SKIN AND EYE PROTECTION: Recommend impervious gloves, clothing and safety glasses with side shields or chemical goggles to avoid skin and eye contact. If material penetrates the skin, change gloves and clothing. Hypersensitive persons should wear gloves or use protective cream.
HYGIENIC PRACTICES: Wash with soap and water before eating, drinking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and pass through hazardous materials. Check shoes carefully after soaking before reuse.
APPLICATION: Use only in accordance with Carboline application instructions, container label and Product Data Sheet.

SECTION IX - SPECIAL PRECAUTIONS:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep away from heat, sparks, open flame, and strong oxidizing agents. Keep containers closed. Store in cool, dry place with adequate ventilation. If pouring or transferring materials, ground all containers and tools.
OTHER PRECAUTIONS: Do not weld, heat, cut or drill on full or empty containers.

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Carboline Company 350 Hanley Ind. Ct. St. Louis, MO 63144
PHONE NO. 314-644-1000 FOR INDUSTRIAL USE ONLY

SPECIFIC STATE REGULATORY INFORMATION

NEW JERSEY
PENNSYLVANIA
Non-Hazardous Materials above 1 Percent:

Name	CAS	Pct
No materials meet this criteria		

CALIFORNIA

WARNING: This product contains a chemical(s) known to the State of California to cause cancer, and birth defects or other reproductive harm.

HEMPAXANE® 55000

BASE 55009 with CURING AGENT 98000

Description:

HEMPAXANE 55000 is a two-component, high-solids, high-gloss, polysiloxane enamel with excellent gloss and colour retention.

Recommended use:

As an isocyanate free glossy decorative and protective finishing coat for new steel structures in severely corrosive atmospheric environment.
Minimum temperature for curing is 0°C/32°F.

Service temperatures:

Maximum, dry exposure only: 120°C/248°F

Availability:

Part of Group Assortment. Local availability subject to confirmation.

PHYSICAL CONSTANTS:

Colours/Shade nos:	White/10170*
Finish:	High-gloss
Volume solids, %:	85 ± 1
Theoretical spreading rate:	6.8 m²/litre - 125 micron 273 sq.ft./US gallon - 5 mils
Flash point:	35°C/95°F
Specific Gravity:	1.3 kg/litre - 10.8 lbs/US gallon
Surface dry:	2½ (approx.) hrs at 20°C/68°F *(ISO 1517)*
Dry to touch:	4 hours at 20°C/68°F
Fully cured:	7 days at 20°C/68°F
V.O.C.:	160 g/litre - 1.3 lbs/US gallon

**(Based on agreement, may also be supplied in other shades).*

The physical constants stated are nominal data according to the HEMPEL Group's approved formulas. They are subject to normal manufacturing tolerances and where stated, being standard deviation according to ISO 3534-1.

APPLICATION DETAILS:

Mixing ratio for 55000:	Base 55009 : Curing agent 98000 5.4:4.6 by volume	
Application method:	Airless spray	Brush
Thinner (max.vol.):	08080 (10%)	08080 (5%)
Pot life:	3 hours (20°C/68°F)	
Nozzle orifice:	.017"-.021"	
Nozzle pressure	100-125 bar /1450 -1800 psi *(Airless spray data are indicative and subject to adjustment)*	
Cleaning of tools:	HEMPEL'S TOOL CLEANER 99610	
Indicated film thickness, dry:	125 micron/5 mils	
Indicated film thickness, wet:	150 micron/6 mils	
Recoat interval, min:	4 hours (20°C/68°F)	
Recoat interval, max:	7 days (20°C/68°F) - See REMARKS overleaf	

Safety:

Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Material Safety Data Sheets and follow all local or national safety regulations. Avoid inhalation, avoid contact with skin and eyes, and do not swallow. Take precautions against possible risks of fire or explosions as well as protection of the environment. Apply only in well ventilated areas

HEMPAXANE 55000

APPLICATION AND CURING CONDITIONS:	The surface must be completely clean and dry at the time of application, and its temperature must be above the dew point to avoid condensation. Minimum temperature for curing is 0°C/32°F, minimum relative humidity 30%. In confined spaces provide adequate ventilation during application and drying.
PRECEDING COAT:	HEMPADUR-system or GALVOSIL according to specification.
SUBSEQUENT COAT:	None.
REMARKS:	
Service temperatures:	At service temperature above 100°C/212°F, slight discoloration may be expected
Film thicknesses:	May be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate and may influence drying time and recoating interval. Normal range is 100 - 125 micron/4 -5 mils. If the product is specified in lower filmthickness, more thinning will be needed for proper filmformation during spray application - additionally the colour in the preceding coat should be considered to reduce contrast.
Exposure to humidity:	HEMPAXANE 55000 will resist condensation and light rain after the dry to touch stage has been reached.
Recoating:	If the maximum recoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.
Application onto zinc silicate:	It is recommended to apply HEMPAXANE 55000 by using a "mist-coat" procedure **provided** the paint temperature is approximately above 20°C/68°F: A thin, undiluted coat is applied (the mist coat) and after a few minutes, a second coat is applied in the full specified film thickness. If the paint temperature is below 20°C/68°F, thinning (max 15%) may be required.
	HEMPAXANE 55000 is for professional use only.
ISSUED BY:	HEMPEL A/S - 5500010170CR001

Material Safety Data Sheet

Protective Clothing	HCS	DOT
	Class: Flammable liquid having a flash point lower than 37.8°C (100°F).	

Section I. Product Identification and Uses

Common/Trade name	**HEMPAXANE 55009**
Color	**Off White 10170**
Multicomponent Paint Systems - Mixed Paint System Designation	Hempaxane 55000 = Hempaxane 55009 + Hempel's 98000
Chemical family	Two component product - base (Paint.)
Material uses	Coatings: Paint. Protective coatings for industrial uses in corrosive environments such as marine, railcar, petroleum, tank storage, chemical and construction applications.
Mixing Ratio	5.38 / 4.62 5509 / 9800
Supplier	**HEMPEL Coatings (USA), Inc. 600 Conroe Park North Drive Conroe, Texas 77303**

TSCA	**Unless otherwise noted, all ingredients are TSCA listed.**
CAS#	Mixture.
Code	5500910170CR003
Molecular weight	Not applicable.
Manufacturer	**HEMPEL Coatings (USA), Inc. 600 Conroe Park North Drive Conroe, Texas 77303**
Manufacturer Telephone:	**Toll free, if outside area codes 713,281,409,or 936: (800) 678-6641 Regular phone number: (936) - 523-6000**

Section IA. First Aid Measures

Eye contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.
Hazardous skin contact	Not available.
Slight inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.
Hazardous inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Slight ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Hazardous ingestion	Not available.

Section II. Hazardous Ingredients

Name	CAS #	% by Weight	TLV/PEL	LC_{50}/LD_{50}
Rx product bisphenol A w / epichlorhydrin Epoxy number avg MW less than 700	30583-72-3	30-60	Not available.	Not available.
petroleum distillates - either low aromatic or hydrodesulfurized heavy	64742-47-8 or 64742-82-1	0-5	Not available.	Not available.
titanium dioxide	13463-67-7	30-60	**OSHA (United States).** TWA: 15 mg/m^3 **ACGIH (United States).** TWA: 10 mg/m^3 **ACGIH TLV (United States, 2000).** TWA: 10 mg/m^3 **OSHA Final Rule (United States, 1989).** TWA: 10 mg/m^3 Form:	Not available.
methyl trimethoxy silane	1185-55-3	0-5	Not available.	Not available.

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para-xylene	106-42-3	0-5	**ACGIH (United States).** TWA: 100 ppm STEL: 150 ppm TWA: 434 mg/m^3 STEL: 651 mg/m^3 **ACGIH TLV (United States, 2000).** STEL: 651 mg/m^3 STEL: 150 ppm TWA: 434 mg/m^3 TWA: 100 ppm **NIOSH REL (United States, 2000).** STEL: 655 mg/m^3 STEL: 150 ppm TWA: 435 mg/m^3 Period: 10 hour(s). TWA: 100 ppm Period: 10 hour(s).	Not available.
ethylbenzene	100-41-4	0-5	**OSHA (United States).** TWA: 435 ppm **ACGIH (United States).** TWA: 100 ppm STEL: 125 ppm TWA: 434 mg/m^3 STEL: 543 mg/m^3 **ACGIH TLV (United States, 2000).** STEL: 543 mg/m^3 STEL: 125 ppm TWA: 434 mg/m^3 TWA: 100 ppm **NIOSH REL (United States, 2000).** STEL: 545 mg/m^3 STEL: 125 ppm TWA: 435 mg/m^3 Period: 10 hour(s). TWA: 100 ppm Period: 10 hour(s). **OSHA Final Rule (United States, 1989).** STEL: 545 mg/m^3 STEL: 125 ppm TWA: 435 mg/m^3 TWA: 100 ppm	ORAL (LD50): Acute: 3500 mg/kg [Rat].
butanol	71-36-3	0-5	**OSHA (United States).** TWA: 300 ppm **ACGIH (United States).** CEIL: 50 ppm CEIL: 152 mg/m^3 **ACGIH TLV (United States, 2000). Skin** CEIL: 152 mg/m^3 CEIL: 50 ppm **NIOSH REL (United States, 2000). Skin** CEIL: 150 mg/m^3 CEIL: 50 ppm **OSHA Final Rule (United States, 1989). Skin** CEIL: 150 mg/m^3 CEIL: 50 ppm	ORAL (LD50): Acute: 790 mg/kg [Rat]. 2680 mg/kg [Mouse]. 2500 mg/kg [wild bird species]. DERMAL (LD50): Acute: 4200 mg/kg [Rabbit].
n-butylacetate	123-86-4	5-15	**OSHA (United States).** TWA: 710 mg/m^3 **ACGIH (United States).** TWA: 150 ppm STEL: 200 ppm TWA: 713 mg/m^3 STEL: 950 mg/m^3 **ACGIH TLV (United States, 2000).** STEL: 200 ppm	ORAL (LD50): Acute: 14130 mg/kg [Rat]. 7100 mg/kg [Mouse]. 4300 mg/kg [Mammal]. DERMAL (LD50): Acute: >17600 mg/kg [Rabbit].

Continued on Next Page

			TWA: 150 ppm **NIOSH REL (United States, 2000).** STEL: 950 mg/m³ STEL: 200 ppm TWA: 710 mg/m³ Period: 10 hour(s). TWA: 150 ppm Period: 10 hour(s). **OSHA Final Rule (United States, 1989).** STEL: 950 mg/m³ STEL: 200 ppm TWA: 710 mg/m³ TWA: 150 ppm	

Section III. Physical Data

Physical state and appearance	Liquid.
pH (1% soln/water)	Neutral.
Odor threshold	The lowest known value is 0.31 ppm (n-butylacetate) Weighted average: 0.76 ppm
Volatility	24.17% (v/v). 14.51% (w/w).
Melting point	May start to solidify at 13.35°C (56°F) based on data for: para-xylene. Weighted average: -66.48°C (-87.7°F)
Boiling point	The lowest known value is 102.06°C (215.7°F) (methyl trimethoxy silane). Weighted average: 121.86°C (251.3°F)
Specific gravity	1.438 (Water = 1)
Vapor density	>1 (Air = 1)
Vapor pressure	The highest known value is 1.2 kPa (8.7 mmHg) (at 20°C) (n-butylacetate).
Evaporation rate	<1 compared to Butyl acetate.
VOC	209 (g/l).
Viscosity	Not available.
$LogK_{ow}$	The product is more soluble in octanol.
Ionicity (surface active agent)	Not available.
Instability temperature	Not available.
Conditions of instability	Not available.
Dispersion properties	Is not dispersed in cold water. See solubility in methanol, diethyl ether, n-octanol, acetone.
Solubility	Partially soluble in methanol, diethyl ether, n-octanol, acetone. Insoluble in cold water.

Odor	Not available.
Taste	Not available.
Color	Off White 10170

Section IV. Fire and Explosion Data

The product is:	Flammable.
Auto-ignition temperature	The lowest known value is 343°C (649.4°F) (butanol).
Fire degradation products	These products are carbon oxides (CO, CO2), halogenated compounds, hydrogen chloride. Some metallic oxides.
Flash points	The lowest known value is CLOSED CUP: 10.9°C (51.6°F). (methyl trimethoxy silane)
Flammable limits	LOWER: 1% UPPER: Less or equal to 13%
Fire extinguishing procedures	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Continued on Next Page

Flammability	Highly flammable in presence of open flames, sparks and static discharge. Flammable in presence of heat.
	Remark Not available.
Risks of explosion	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
	Remark Not available.

Section V. Reactivity Data

Stability	The product is stable.
Hazardous decomp. products	These products are halogenated compounds, hydrogen chloride.
Degradability	Not available.
Products of degradation	These products are carbon oxides (CO, CO2) and water, halogenated compounds. Some metallic oxides. The products of degradation are as toxic as the product itself.
	Remark Not available.
Corrosivity	Not available.
	Remark Not available.
Reactivity	Not available.
	Remark Not available.

Section VI. Toxicological Properties

Routes of entry	Absorbed through skin. Eye contact. Inhalation. Ingestion
TLV	Not available.
Toxicity to animals	Acute oral toxicity (LD50): 790 mg/kg [Rat]. (butanol) Acute dermal toxicity (LD50): 4200 mg/kg [Rabbit]. (butanol)
	Remark Not available.
Chronic effects on humans	Slightly hazardous in case of inhalation (lung irritant). **CARCINOGENIC EFFECTS**: Classified 2A (Probable for human.) by IARC [hi-flash aliphatic hydrocarbons]. Classified None. by NIOSH [hi-flash aliphatic hydrocarbons]. Classified None. by NIOSH [titanium dioxide]. Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [titanium dioxide]. Classified None. by NIOSH [methyl trimethoxy silane]. Classified None. by NIOSH [meta-xylene]. Classified A4 (Not classifiable for human or animal.) by ACGIH [meta-xylene]. Classified None. by NIOSH [para-xylene]. Classified A4 (Not classifiable for human or animal.) by ACGIH [para-xylene]. Classified 2B (Possible for human.) by IARC [ethylbenzene]. Classified None. by NIOSH [ethylbenzene]. Classified None. by NIOSH [butanol]. Classified None. by NIOSH [n-butylacetate]. Classified A4 (Not classifiable for human or animal.) by ACGIH [n-butylacetate]. **MUTAGENIC EFFECTS** Not available. **TERATOGENIC EFFECTS** Not available. **DEVELOPMENTAL TOXICITY** Not available. The substance is toxic to blood, lungs, upper respiratory tract. The substance may be toxic to kidneys, the nervous system, liver, mucous membranes, heart, gastrointestinal tract, skin, , central nervous system (CNS), eye, lens or cornea. Repeated or prolonged exposure to the substance can produce target organs damage.
	Remark NIOSH- titanium dioxide -a potential carcinogen to lungs in rats due to inhalation of excessive dust and overwhelmed lung clearance mechanisms. The National Cancer Institute bioassay concluded that titanium dioxide did not effect mortality, and was not carcinogenic at dose levels of 25,000 or 50,000 ppm in rats or mice. (Referenced in Federal Register: March 25,1998. Vol 63; No. 571, Page 14361). (titanium dioxide)
Acute effects on humans	Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant), of inhalation.

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Remark

NIOSH- titanium dioxide -a potential carcinogen to lungs in rats due to inhalation of excessive dust and overwhelmed lung clearance mechanisms. The National Cancer Institute bioassay concluded that titanium dioxide did not effect mortaility, and was not carcinogenic at dose levels of 25,000 or 50,000 ppm in rats or mice. (Referenced in Federal Register: March 25,1998. Vol 63; No. 571, Page 14361). (titanium dioxide)

Section VII. Preventive Measures

Waste information	Type: Hazardous chemical waste. Location: not available Classification: not available Disposal.: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Storage: not available Recycling: not available
Waste stream	Not available.
Storage	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
Precautions	Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label.
Small spill and leak	Absorb with an inert material and put the spilled material in an appropriate waste disposal
Large spill and leak	Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.
Protective clothing in case of large spill	Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Section VIII. Classification

DOT

3

Paint, 3, 1263, III, Not pollutant., RQ (epichlorhydrin, methanol, ortho-xylene, meta-xylene, para-xylene, ethylbenzene, butanol, n-butylacetate)

Maritime transportation

Not pollutant.

Marine pollutant substance: epichlorhydrin

Remark

-

HCS

Class: Flammable liquid having a flash point lower than 37.8°C (100°F).

Remark

Potential sensitizer (ethylbenzene)

Federal and State Regulations

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: epichlorhydrin
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: epichlorhydrin
California prop. 65 (no significant risk level): epichlorhydrin
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: epichlorhydrin

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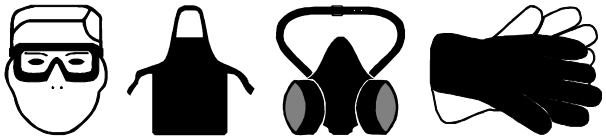
Connecticut carcinogen reporting list.: ortho-xylene
Connecticut hazardous material survey.: Xylene(s)
Illinois toxic substances disclosure to employee act: Xylene(s)
Illinois chemical safety act: Xylene(s)
New York release reporting list: Xylene(s)
Rhode Island RTK hazardous substances: Xylene(s)
Pennsylvania RTK: epichlorhydrin: (special hazard, environmental hazard, generic environmental hazard); DIGLYCIDYL ETHER: (environmental hazard, generic environmental hazard); titanium dioxide: (generic environmental hazard); methanol: (environmental hazard, generic environmental hazard); Xylene(s): (environmental hazard, generic environmental hazard); ethylbenzene: (environmental hazard, generic environmental hazard); butanol: (environmental hazard, generic environmental hazard); n-butylacetate: (environmental hazard, generic environmental hazard)
Florida: epichlorhydrin; methanol; Xylene(s); ethylbenzene; butanol; n-butylacetate
Minnesota: epichlorhydrin; titanium dioxide; methanol; Xylene(s); ethylbenzene; butanol; n-butylacetate
Michigan critical material: epichlorhydrin; Xylene(s)
Massachusetts RTK: epichlorhydrin; DIGLYCIDYL ETHER; titanium dioxide; methanol; Xylene(s); ethylbenzene; butanol; n-butylacetate
Massachusetts spill list: DIGLYCIDYL ETHER
New Jersey: epichlorhydrin; DIGLYCIDYL ETHER; titanium dioxide; methanol; Xylene(s); ethylbenzene; butanol; n-butylacetate
New Jersey spill list: Xylene(s)
New Jersey toxic catastrophe prevention act: Xylene(s)
Louisiana RTK reporting list: Xylene(s)
Louisiana spill reporting: Xylene(s)
TSCA 4(a) final testing rules: n-butylacetate.
TSCA 5(e) substance consent order: n-butylacetate.
TSCA 8(a) PAIR: epichlorhydrin, meta-xylene, para-xylene, ethylbenzene.
TSCA 8(a) IUR: butanol, n-butylacetate.
TSCA 8(b) inventory: All substances are listed on the TSCA Inventory with the exception of: C13-C16 Alcohol mixture.
TSCA 12(b) one time export: n-butylacetate.
SARA 302/304/311/312 extremely hazardous substances: epichlorhydrin; DIGLYCIDYL ETHER
SARA 302/304 emergency planning and notification: epichlorhydrin; DIGLYCIDYL ETHER
SARA 302/304/311/312 hazardous chemicals: epichlorhydrin; DIGLYCIDYL ETHER; hi-flash aliphatic hydrocarbons; titanium dioxide; methanol; methyl trimethoxy silane; Xylene(s); ethylbenzene; butanol; n-butylacetate
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: CYCLOHEXANOL, 4,4'-(1-METHYLETHYLIDENE)BIS-, POLYMER WITH (CHLOROMETHYL)OXIRANE
Epoxy number average molecular weight less than 700: Delayed (Chronic) Health Hazard; epichlorhydrin: Fire Hazard, reactive, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; DIGLYCIDYL ETHER: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; hi-flash aliphatic hydrocarbons: Delayed (Chronic) Health Hazard; titanium dioxide: Immediate (Acute) Health Hazard; methanol: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; methyl trimethoxy silane: Fire Hazard, Immediate (Acute) Health Hazard; Xylene(s): Fire Hazard; ethylbenzene: Fire Hazard, Immediate (Acute) Health Hazard; butanol: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; n-butylacetate: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
CERCLA: Hazardous substances.: epichlorhydrin: 100 lbs. (45.36 kg); methanol: 5000 lbs. (2268 kg); Xylene(s): 100 lbs. (45.36 kg); ethylbenzene: 1000 lbs. (453.6 kg); butanol: 5000 lbs. (2268 kg); n-butylacetate: 5000 lbs. (2268 kg);

Section IX. Protective Clothing

Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Impervious gloves.



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Section X. Other Information

References Not available.

Note: In USA, consult Code of Federal Regulations, Title 29, Labor, Parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable Federal, State or local regulations that apply to safe practices in coating operations.

Validated by Algimantas Pliodzinskas on 12/17/2003.

Verified by Algimantas Pliodzinskas.

Printed 12/17/2003.

Emergency telephone number **For Transportation Emergencies, call CHEMTREC: (800) 424-9300. If outside USA/Canada, call: (703) 527-3887.**
For all other information call Hempel Coatings (USA), Inc. (936) 523-6000. Toll free [if outside area codes 713, 281,409,936]: (800) 678-6641

Material Safety Data Sheet

Protective Clothing	HCS	DOT
	Class: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).	

Section I. Product Identification and Uses

Common/Trade name	**HEMPEL'S 98000**
Color	**Clear 00000**
Multicomponent Paint Systems - Mixed Paint System Designation	Hempaxane 55000 = Hempaxane 55009 + Hempel's 98000
Chemical family	Two component product - cure (Polymer. Paint. Organic.)
Material uses	Coatings: Catalyst for epoxy resins. Hardener for resins. Paint.
Mixing Ratio	5.38: 4.62 55009 / 98000
Supplier	**HEMPEL Coatings (USA), Inc. 600 Conroe Park North Drive Conroe, Texas 77303**

TSCA	**Unless otherwise noted, all ingredients are TSCA listed.**
CAS#	Mixture.
Code	9800000000US001
Molecular weight	Not applicable.
Manufacturer	**HEMPEL Coatings (USA), Inc. 600 Conroe Park North Drive Conroe, Texas 77303**
Manufacturer Telephone:	**Toll free, if outside area codes 713,281,409,or 936: (800) 678-6641 Regular phone number: (936) - 523-6000**

Section IA. First Aid Measures

Eye contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.
Hazardous skin contact	Not available.
Slight inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.
Hazardous inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Slight ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Hazardous ingestion	Not available.

Section II. Hazardous Ingredients

Name	CAS #	% by Weight	TLV/PEL	LC_{50}/LD_{50}
aminoalkylfunctional polydimethylsiloxane [based on 3-(2-aminoethylamino)propyltrimethoxysila		60-80	Not available.	Not available.
3-(2-aminoethylamino)propyltrimethoxysila	1760-24-3	0-5	Not available.	Not available.
meta-xylene	108-38-3	0-5	**ACGIH (United States).** TWA: 100 ppm STEL: 150 ppm TWA: 434 mg/m^3 STEL: 651 mg/m^3 **ACGIH TLV (United States, 2000).** STEL: 651 mg/m^3 STEL: 150 ppm TWA: 434 mg/m^3 TWA: 100 ppm **NIOSH REL (United States,**	Not available.

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			2000). STEL: 655 mg/m³ STEL: 150 ppm TWA: 435 mg/m³ Period: 10 hour(s). TWA: 100 ppm Period: 10 hour(s).	
para-xylene	106-42-3	5-15	**ACGIH (United States).** TWA: 100 ppm STEL: 150 ppm TWA: 434 mg/m³ STEL: 651 mg/m³ **ACGIH TLV (United States, 2000).** STEL: 651 mg/m³ STEL: 150 ppm TWA: 434 mg/m³ TWA: 100 ppm **NIOSH REL (United States, 2000).** STEL: 655 mg/m³ STEL: 150 ppm TWA: 435 mg/m³ Period: 10 hour(s). TWA: 100 ppm Period: 10 hour(s).	Not available.
ethylbenzene	100-41-4	0-5	**OSHA (United States).** TWA: 435 ppm **ACGIH (United States).** TWA: 100 ppm STEL: 125 ppm TWA: 434 mg/m³ STEL: 543 mg/m³ **ACGIH TLV (United States, 2000).** STEL: 543 mg/m³ STEL: 125 ppm TWA: 434 mg/m³ TWA: 100 ppm **NIOSH REL (United States, 2000).** STEL: 545 mg/m³ STEL: 125 ppm TWA: 435 mg/m³ Period: 10 hour(s). TWA: 100 ppm Period: 10 hour(s). **OSHA Final Rule (United States, 1989).** STEL: 545 mg/m³ STEL: 125 ppm TWA: 435 mg/m³ TWA: 100 ppm	ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section III. Physical Data

Physical state and appearance	Liquid.
pH (1% soln/water)	Not applicable.
Odor threshold	The lowest known value is 0.62 ppm (meta-xylene) Weighted average: 1.85 ppm
Volatility	11.6% (v/v). 10% (w/w).
Melting point	May start to solidify at 13.35°C (56°F) based on data for: para-xylene. Weighted average: 3.17°C (37.7°F)
Boiling point	140°C (284°F)
Specific gravity	1.12 (Water = 1)
Vapor density	>1 (Air = 1)

Odor	Not available.
Taste	Not available.
Color	Clear 00000

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Vapor pressure	The highest known value is 0.8 kPa (6 mmHg) (at 20°C) (meta-xylene).
Evaporation rate	<1
VOC	111 (g/l).
Viscosity	Not available.
LogK$_{ow}$	The product is more soluble in octanol.
Ionicity (surface active agent)	Not available.
Instability temperature	Not available.
Conditions of instability	Not available.
Dispersion properties	Easily dispersed in cold water. See solubility in methanol, diethyl ether, n-octanol, acetone.
Solubility	Partially soluble in methanol, diethyl ether, n-octanol, acetone. Insoluble in cold water.

Section IV. Fire and Explosion Data

The product is:	Flammable.
Auto-ignition temperature	The lowest known value is 524.75 to 528.06°C (976.5 to 982.5°F) (para-xylene).
Fire degradation products	These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...). Some metallic oxides.
Flash points	CLOSED CUP: 38°C (100.4°F).
Flammable limits	LOWER: 1.7% UPPER: 7.6%
Fire extinguishing procedures	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
Flammability	Flammable in presence of open flames, sparks and static discharge. Slightly flammable to flammable in presence of heat.
	Remark Not available.
Risks of explosion	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
	Remark Not available.

Section V. Reactivity Data

Stability	The product is stable.
Hazardous decomp. products	Not available.
Degradability	Not available.
Products of degradation	These products are carbon oxides (CO, CO2) and water, nitrogen oxides (NO, NO2...). Some metallic oxides. The product itself and its products of degradation are not toxic.
	Remark Not available.
Corrosivity	Not available.
	Remark Not available.
Reactivity	Slightly reactive to reactive with acids.
	Remark Not available.

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Section VI. Toxicological Properties

Routes of entry	Absorbed through skin. Eye contact. Inhalation. Ingestion
TLV	Not available.
Toxicity to animals	LD50: Not available. LC50: Not available. **Remark** Not available.
Chronic effects on humans	**CARCINOGENIC EFFECTS**: Classified None. by NIOSH [ortho-xylene]. Classified A4 (Not classifiable for human or animal.) by ACGIH [ortho-xylene]. Classified None. by NIOSH [meta-xylene]. Classified A4 (Not classifiable for human or animal.) by ACGIH [meta-xylene]. Classified None. by NIOSH [para-xylene]. Classified A4 (Not classifiable for human or animal.) by ACGIH [para-xylene]. Classified 2B (Possible for human.) by IARC [ethylbenzene]. Classified None. by NIOSH [ethylbenzene]. Classified None. by NIOSH [toluene]. Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [toluene]. Classified None. by NIOSH [methanol]. **MUTAGENIC EFFECTS** Not available. **TERATOGENIC EFFECTS** Not available. **DEVELOPMENTAL TOXICITY** Not available. The substance may be toxic to blood, kidneys, lungs, the nervous system, liver, heart, gastrointestinal tract, upper respiratory tract, skin, , central nervous system (CNS), eye, lens or cornea. Repeated or prolonged exposure to the substance can produce target organs damage. **Remark** Caution: This product contains ethylbenzene. A draft report on a study conducted by the National Toxicology program states that lifetime inhalation exposure of rats and mice to concentrations of ethylbenzene (750 ppm) resulted in increases in certain types of cancer, including kidney tumors in rats and lung and kidney tumors in mice. These effects were not observed in animals exposed to lower concentrations of ethylbenzene (75 ppm and 250 ppm). The draft report does not address the relevance of these results to humans. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and classified it as a possible human carcinogen (Group 2B) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. (ethylbenzene)
Acute effects on humans	Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant), of inhalation. **Remark** Caution: This product contains ethylbenzene. A draft report on a study conducted by the National Toxicology program states that lifetime inhalation exposure of rats and mice to concentrations of ethylbenzene (750 ppm) resulted in increases in certain types of cancer, including kidney tumors in rats and lung and kidney tumors in mice. These effects were not observed in animals exposed to lower concentrations of ethylbenzene (75 ppm and 250 ppm). The draft report does not address the relevance of these results to humans. (ethylbenzene)

Section VII. Preventive Measures

Waste information	Type: Hazardous chemical waste. Location: not available Classification: not available Disposal.: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Storage: not available Recycling: not available
Waste stream	Not available.
Storage	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
Precautions	Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label.
Small spill and leak	Absorb with an inert material and put the spilled material in an appropriate waste disposal
Large spill and leak	Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed.

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Protective clothing in case of large spill	Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Section VIII. Classification

DOT 3

PAINT, 3, 1263, III, Not pollutant., RQ (ortho-xylene, meta-xylene, para-xylene, ethylbenzene, toluene, methanol, Benzene)

Maritime transportation Not pollutant.

Remark
-

HCS Class: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).

Remark

Potential sensitizer (ethylbenzene)

Federal and State Regulations

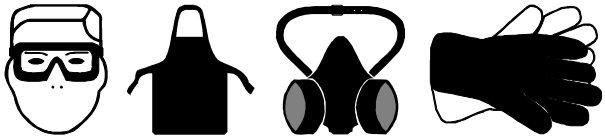
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: toluene; Benzene
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Benzene
California prop. 65 (no significant risk level): Benzene
California prop. 65 (acceptable daily intake level): toluene: 7000 mg/day (value), 13000 mg/day (inhalation)
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: toluene; Benzene
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzene
Connecticut carcinogen reporting list.: ortho-xylene
Connecticut hazardous material survey.: Xylene(s)
Illinois toxic substances disclosure to employee act: Xylene(s)
Illinois chemical safety act: Xylene(s)
New York release reporting list: Xylene(s)
Rhode Island RTK hazardous substances: Xylene(s)
Pennsylvania RTK: Xylene(s): (environmental hazard, generic environmental hazard); ethylbenzene: (environmental hazard, generic environmental hazard); toluene: (environmental hazard, generic environmental hazard); methanol: (environmental hazard, generic environmental hazard); Benzene: (special hazard, environmental hazard, generic environmental hazard)
Florida: Xylene(s); ethylbenzene; toluene; methanol; Benzene
Minnesota: Xylene(s); ethylbenzene; toluene; methanol; Benzene
Michigan critical material: Xylene(s); toluene; Benzene
Massachusetts RTK: Xylene(s); ethylbenzene; toluene; methanol; Benzene
New Jersey: Xylene(s); ethylbenzene; toluene; methanol; Benzene
New Jersey spill list: Xylene(s)
New Jersey toxic catastrophe prevention act: Xylene(s)
Louisiana RTK reporting list: Xylene(s)
Louisiana spill reporting: Xylene(s)
TSCA 8(a) PAIR: meta-xylene, para-xylene, ethylbenzene, toluene.
TSCA 8(b) inventory: All substances are listed on the TSCA Inventory.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Xylene(s); ethylbenzene; toluene; methanol; Benzene
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Xylene(s): Fire Hazard; ethylbenzene: Fire Hazard, Immediate (Acute) Health Hazard; toluene: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; methanol: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; Benzene: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

Continued on Next Page

CERCLA: Hazardous substances.: Xylene(s): 100 lbs. (45.36 kg); ethylbenzene: 1000 lbs. (453.6 kg); toluene: 1000 lbs. (453.6 kg); methanol: 5000 lbs. (2268 kg); Benzene: 10 lbs. (4.536 kg);

Section IX. Protective Clothing

Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Impervious gloves.



Section X. Other Information

References Not available.

Note: In USA, consult Code of Federal Regulations, Title 29, Labor, Parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable Federal, State or local regulations that apply to safe practices in coating operations.

Validated by Algimantas Pliodzinskas on 12/17/2003.

Verified by Algimantas Pliodzinskas.

Printed 12/17/2003.

Emergency telephone number **For Transportation Emergencies, call CHEMTREC: (800) 424-9300. If outside USA/Canada, call: (703) 527-3887.**
For all other information call Hempel Coatings (USA), Inc. (936) 523-6000. Toll free [if outside area codes 713, 281,409,936]: (800) 678-6641

3029 South Harbor Blvd, Santa Ana, CA 92704-6448 USA
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Fax: 714/434-0888
E-Mail: IntegratedPolymerIndustries@msn.com

Integrated Polymer Industries, Inc

BE SAFE! READ OUR PRODUCT SAFETY INFORMATION…AND PASS IT ON. PRODUCT LIABILITY LAW REQUIRES IT.

IPN-FlexFair 166501

Engineering Data Bulletin

1. Material Description

Two-component, stiff paste, designed as a structural multi-purpose fairing compound with superior LO properties. An IPN-based tough, flexible, thermally conductive, and chemical resistant material for aerospace use.

Features & Benefits	• Zero VOC; contains no solvent; environmentally friendly
	• IPN- based technology adapted to low observable materials
	• Passed all tests conducted by Northrop Grumman for the U.S. Air Force
	• Qualified for and currently in use on B-2 Stealth Bombers
	• Cure at ambient temperature without requiring autoclaves or ovens
	• Sandable within 6 hours
	• UV resistant
	• Effective against high or low temperatures and rapid temperature changes
	• Goes on composite, steel, aluminum, fiberglass, wood, and most elastomers
	• Protects external parts against corrosion, erosion, rain, wind, and other elements
	• Provides long service life, without frequently coming off the plane
	• 2 component, easy to mix and apply with a spatula
	• Designed for surface smoothness applications
	• Repairs itself easily; saves time and labor; virtually eliminates downtime
	• Single material replaces multiple products
	• Improved application (can apply under high humidity, dew, even rain conditions)
	• Insensitive to moisture or condensation during storage, application, or cure
	• Unaffected by moisture, condensation, humidity, dew, or water during service.

3. Physical Properties

IPN-166501	Base Ref:11/35	Solidifier Ref: 10/80	Mixed	Comments
Color	Amber	Black	Gray	Other colors possible with minimum order
Weight, grams	59	61	120	4 0z kit (120 cc)
Mix ratio , by weight	1	1.034	N/A	
Mix ratio, by volume	1	1.186	N/A	
Density, g/cc	1.1617	1.0128	1.0970	
Potlife, min @ 25°C	N/A	N/A	50	
Application tools	Spatula	Spatula	Spatula	
Touch dry time @ 25°C,	N/A	N/A	4h	
Sandable @ 25°C,	N/A	N/A	6h	
Mechanical cure @ 25°C,	N/A	N/A	24h	

Chemical Cure @ 25°C	N/A	N/A	72h	
Coverage of 1-kit at 3mm thickness	N/A	N/A	375 cm^2	
Slump at 25mm thickness @ 25°C	Zero	Zero	zero	Nonsag pastes; vertical/overhead use OK
Adhesion, psi @ 25°C, flat tensile	N/A	N/A	1,500	Al/steel, Elcometer pull-off
Flexibility, pass Mandrel	N/A	N/A	1cm	Outside diameter
Salt Spray ASTM B-117	N/A	N/A	No effect	10cm x 15cm panels, 3000hrs
Weather-o-Meter, ASTM G26 (CAM 47)	N/A	N/A	No effect	10cm x 15cm panels, 500hrs
UV Exposure @ 63°C	N/A	N/A	No effect	10cm x 15cm panels, 7 days
Thermal Cycling, -40°C + 82°C, 24 cycles, 20 min soak and ramp	N/A	N/A	No effect	2.5cm x 30cm strips;
Elongation	N/A	N/A	20+%	
Flexibility, 100 cycles	N/A	N/A	No effect	180 degree bending
Cure time, h / peel values, ppiw	N/A	N/A	6 / 15.4	At 18°C to 29°C
Tensile Strength, ASTM D 412			>1500 psi	
Shore A hardness in 1h, 6h , 24h			60, 80, 90	
Shore D hardness in 6h, 24h			40, 60	
Peel Strength, 24hrs, ppiw			>30	
Lap Shear, psi			2,100	
Gardner Impact, 2lb/40inch drop			No effect	10 cycles

4. Chemical Resistance		
Fluids & Test Specifications: Northrop Grumman Environmental Labs Tests, 8 Overlaps, 6 Coupons, 10cm x 15cm; 24hrs Fluid Exposures	**Test Result**	**Comments**
MIL-L-7808 @ 25°C	No effect	No Adhesion Loss or Hardness Reduction
MIL-H-83282 @ 25°C	No effect	No Adhesion Loss or Hardness Reduction
JP-8 Fuel @ 25°C	No effect	No Adhesion Loss or Hardness Reduction
Deicer @ 25°C	No effect	No Adhesion Loss or Hardness Reduction
MIL-L-7808 @ 71°C	No effect	No Adhesion Loss or Hardness Reduction
MIL-H-83282 @ 71°C	No effect	No Adhesion Loss or Hardness Reduction
JP-8 Fuel @ 71°C	No effect	No Adhesion Loss or Hardness Reduction
Deicer @ 71°C	No effect	No Adhesion Loss or Hardness Reduction

5. Theory of IPNs	
Background	• IPNs ***(inter-penetrating-networks)*** is the next frontier in the high performance materials technology. Academic research work on IPNs dates back to early 1970s, when the founder of IPI was one of the investigators. Application of the IPNs to the coatings technology was solely pioneered by IPI in mid 1980s. Maturing of IPNs into proven industrial alternatives and emergence of IPNs as commercial success took place in the 1990s.

Fundamental Principles	• IPNs are super high performance, hybrid polymers, complex in structure, but simple in principle. IPNs aim to build on the desirable properties of commercial polymers like epoxies, urethanes, acrylics, silicones, etc., while leaving out their poor, undesirable properties. For example, epoxies are good in adhesion and chemical resistance, but poor in UV resistance and they are mostly brittle. Urethanes, on the other hand, are flexible and tough, but they suffer the draw back of hydrolysis, which allows water ingression over time to cause blisters. Acrylics are great against UV but they can not bond to wet surfaces well and they have shrinkage, flammability, and odor problems. IPNs, therefore, aim to build a polymeric backbone which gets its adhesion and chemical resistance from epoxies, flexibility and toughness from urethanes, and UV resistance from acrylics, among other things, while leaving out the poor properties of these polymers. • Topics like what kind of polymers are used as starting materials, what kind of IPNs are built from them, and how this whole process really works, etc. are closely guarded trade secrets. IPI formulates and manufactures many different kinds of materials using IPNs, including but not limited to adhesives, sealants, caulks, mastics, composites, primers, and coatings.

Additional Information	• For more information and/or samples, please contact us. • Thank you for your interest in our unique IPN products!

Integrated Polymer Industries, Inc.
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Fax: 714/434-0888
Web: **I**ntegrated**P**olymer.com

integrated polymer ® industries, inc.

Be Safe! Read Our Product Safety Information And Pass It On. Product Liability Law Requires It. Before Handling, Please ReadAnd Follow All Instructions Per The Technical Data, Material Safety Data Sheets, and Labels, Which Are Inseparable For Safe Use And Physical And Health Hazard Information. For Industrial Use Only. Not For Sale To General Public. For Professional Application By Trained, Qualified, And Experienced Applicators. This Product Should Not Be Used By Untrained Or Non-Professional Personnel. All Technical Data Subject To Change Without Notice. The Values Shown Are Not Intended For Use In Preparing Specification. Calculated Values Are Shown And May Vary Slightly *From The Actual Manufactured Material. Please Contact IPI For Further Information.*

IPI-FlexFair™

Material Safety Data Sheet

HAZARDOUS MATERIAL INFORMATION SYSTEM (HMIS)					NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)	
	Base	Solidifier	Mixed	Cured		
Fire	**1**	**1**	**1**	**0**	Health	**NDA**
Toxicity	**1**	**2**	**2**	**0**	Flammability	**NDA**
Reactivity	**0**	**0**	**2**	**0**	Reactivity	**NDA**
Special	**0**	**0**	**0**	**0**		
Target Organs	**Eyes, Skin and Respiratory Systems**					

Legend: 4 - Extreme, 3 - High, 2 - Moderate, 1 - Slight, 0 - Insignificant

Note: HMIS and NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

	BASE	SOLIDIFIER
1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION		
Material Identity		
Product Trade Name	**IPI-FlexFair™**	
Product Code	**AE-166501**	
Number Of Components	**2**	
Chemical Name	**IPN (interpenetrating polymer network) subassembly containing select reactive sites, built into the pre-polymer backbone, nature and identity of which are trade secrets. Dominant reactive site resembles: Modified 4,4'-Isopropylidenediphenol Epichlorohydrin**	**IPN (interpenetrating polymer network) subassembly containing select reactive sites, built into the pre-polymer backbone, nature and identity of which are trade secrets. Dominant reactive site resembles: Modified Aliphatic Polyamine**
Synonyms	**NDA**	**NDA**
Empirical Formula	**Proprietary Mixture**	**Proprietary Mixture**
Manufacturer		
Company	**Integrated Polymer Industries, Inc (IPI)**	
Address	**3029 South Harbor Blvd, Santa Ana, CA 92704-6448 USA**	
IPI Emergency Number	**714/434-0800**	
24 Hour Emergency Assistance	**800/424-9300 CHEMTREC**	
MSDS Prepared By	**Polymer Engineering Department**	
MSDS Effective Date	**February 01, 2001**	

2. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS		
Ingredient 1		
Common Name	**NDA**	**NDA**
Chemical Identity	**4,4'-Isopropylidenediphenol Epichlorohydrin**	**Phenol**
CAS Registry No.	**25068-38-6**	**108-95-2**

Concentrations % By Weight	**< 30**				**<1**			
OSHA Hazardous Ingredient	**NDA**				**NDA**			
Exposure Limits	Component				Component			
	OSHA, ppm	STEL	PEL		OSHA, ppm	STEL	PEL	
		NDA	**NDA**			**NDA**	**NDA**	
	ACGIH, ppm, TLV	STEL	TWA		ACGIH, ppm, TLV	STEL	TWA	
		NDA	**NDA**			**NDA**	**NDA**	
	Comment	**Irritant by skin contact.**			Comment	**Irritant by skin contact; toxic by ingestion; biologically corrosive. Locked into the molecular network; not free for reaction.**		
Carcinogen Status	OSHA	ACGIH	NTP	IARC	OSHA	ACGIH	NTP	IARC
	NDA	**NDA**	**NDA**	**NDA**	**NDA**	**NDA**	**NDA**	**NDA**

Ingredient 2

Common Name	**Non-Hazardous Ingredients**				**Noon-Hazardous Ingredients**			
Chemical Identity	**Information concerning non-hazardous ingredients is considered a Trade Secret.**							
CAS Registry No.	**NA**				**NA**			
Concentrations % By Weight	**NA**				**NA**			
OSHA Hazardous Ingredient	**NA**				**NA**			
Exposure Limits	Component	**NA**			Component	**NA**		
	OSHA, ppm	STEL	PEL		OSHA, ppm	STEL	PEL	
		NA	**NA**			**NA**	**NA**	
	ACGIH, ppm, TLV	STEL	TWA		ACGIH, ppm, TLV	STEL	TWA	
		NA	**NA**			**NA**	**NA**	
	Comment	**NA**			Comment	**NA**		
Carcinogen Status	OSHA	ACGIH	NTP	IARC	OSHA	ACGIH	NTP	IARC
	NA	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING: Prolonged or repeated exposure may cause skin sensitization, nose and throat irritation, and/or other allergic response. Ingestion may cause nausea, vomiting, pain, upset stomach, and diarrhea.

Appearance and Odor	*Black, stiff paste*	***Yellowish, stiff paste***
Flammability	***Nonflammable***	***Nonflammable***
Environmental	***May be harmful to aquatic organisms. As a precaution, do not allow it to enter a body of water.***	
Health	***May be a skin sensitizer. Avoid skin contact.***	

Effects of Overexposures

Primary Route(s) of Entry	**skin contact, eye contact.**	
Eye	**Contact may cause sensitization, irritation, or burn.**	
Skin	**Repeated exposure may cause irritation, skin sensitization, and/or other allergic responses.**	
Inhalation	**NDA**	**High concentration of vapors may cause irritation.**
Ingestion	**NDA**	**NDA**
Systemic (OtherTarget Organ) Effects	**NDA**	**NDA**
Signs and Symptoms of Exposure / **Acute Effects**	**Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: gastrointestinal irritation (nausea, vomiting, diarrhea), irritation (nose, throat, respiratory tract), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache).**	

	Possible Longer Term Effects	Repeated and/or prolonged exposure may cause allergic reaction/sensitization, adverse respiratory effects (such as cough, shortness of breath), adverse eye effects (such as conjunctivitis or corneal damage). Effects from inhalation of vapors may be delayed. Repeated and/or prolonged exposure to low concentrations of vapor may cause sore throat, eye irritation.	
Medical Conditions Generally Aggravated by Exposure		Asthma, chronic respiratory disease (e.g. bronchitis, emphysema), eye disease.	
Developmental Information		NDA	NDA
Teratology (Birth Defects)		NDA	NDA
Reproductive Effects		NDA	NDA
Other Health Effects		NDA	NDA
Chronic		Prolonged or repeated exposure may cause asthma, skin sensitization, and/or other allergic response.	Solidifier will cause burns. Prolonged or repeated exposure may cause asthma, skin sensitization, and/or other allergic response.
Carcinogenicity		This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.	

4. FIRST AID

Eye	Immediately flush eyes with water and continue washing for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.
Skin	Immediately wash skin with soap and water. Remove contaminated clothing. Obtain medical attention if irritation persists.
Inhalation	Remove to fresh air. Obtain medical attention if symptoms persist.
Ingestion	Seek immediate medical attention. If individual is drowsy or unconscious, do not give anything by mouth. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.
Overexposure Effects	Overexposure to this material can cause moderate skin and severe eye irritation. Can be harmful if ingested.
Medical Conditions generally Aggravated by Exposure	Asthma, chronic respiratory disease (e.g. bronchitis, emphysema), eye disease.
Note to Physicians	Treatment based on judgment of the physician in response to reactions of the patient. No incidents of overexposure by any route have ever been reported since 1985, establishment of the manufacturer, which leads manufacturer to believe that, when used properly by generally accepted good industrial practices, there should not be any threat to health of any enduser. All information presented here are precautionary, not based on real life incidents. While possibility of an accident is always there, probability due to small size of product and its paste form, is quite low.
Additional Information	Promptly remove and discard contaminated clothing.

5. FIRE & EXPLOSION DATA

Flammable Properties	Flash Point	>199°F/93°C	>199°F/93°C
	Method	Setaflash	Pensky-Martens Closed Cup (ASTM D-93)
	Autoignition Temp.	NDA	NDA
Flammability Limit/ % Volume in Air	Lower (LFL)	NDA	NDA
	Upper (UFL)	NDA	NDA
Explosive Limit	Lower (LEL)	NDA	NDA
	Upper (UEL)	NDA	NDA
Fire Hazard Classification (OSHA/NFPA)		NDA	NDA
Fire and Explosion Hazards		No unusual hazards. Base will not burn unless preheated.	Heavy smoke and toxic fumes will evolve when in fire.
Hazardous Combustion and Decomposition Products		NDA	NO, NO_2
Extinguishing Media		Foam, CO_2, Dry Chemicals, Water	
Fire Fighting Procedures		To extinguish combustible residues of this product use carbon dioxide, dry chemical, or foam.	
Protective Equipment for Firefighters		Self-contained breathing apparatus (SCBA) and protective fire fighting clothing (fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.	
NFPA Hazard Codes		See Chart Page 1.	

HMIS Hazard Codes	**See Chart Page 1.**
Unusual Hazards	**There are no known unusual fire or explosion hazards. May generate toxic or irritating combustion products.**

6. ACCIDENTAL RELEASE MEASURES (*see Section 15 for Regulatory Information*)

Not applicable due to small size (4oz) and paste form of this product.

Evacuation	**NA**
Containment Techniques	**NA**
Clean-Up Procedures	**NA**
Steps To Be Taken In Case Material Is Released Or Spilled	**NA**
Reporting	**NA**

7. HANDLING AND STORAGE

Shelf Life	**24 months from date of shipment by manufacturer in tightly sealed, original, unopened containers when stored between 60°F to 90°F (16°C to 32°C) indoors. Base component will get hard due to a built in safety mechanism, which ensures uniformity of the formula. Use a hot air blower a minute (or hot water bath for 3-4 minutes), to re-liquefy the base component. This storage hardening / heat softening mechanism is by design and it has nothing to do with product being bad. If hardening occurs, simply warm to re-liquefy base component and mix it with solidifier component. If microwave oven is used to warm the base component, avoid overheating or making the product very hot or runny like water and do not mix with food items.**
Storage Conditions	**Keep original containers tightly sealed when not in use. Store between 60°F to 90°F (16°C to 32°C) indoors, out of direct sunshine, in dry place, protected and isolated from weather, heat and cold, sparks, open flame, and other damage. Store with adequate ventilation. Segregate from foodstuffs. KEEP AWAY FROM CHILDREN. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal. FOR INDUSTRIAL USE ONLY.**
Handling And Safety Precautions	**If cured material is sanded, use proper precautions and wear adequate protective equipment to prevent overexposure to nuisance particulates. Do not consume food, drink, or tobacco in areas where they may become contaminated with product. Refer to Exposure Control/Personal Protection, Section 8, of this MSDS. Do not reuse empty containers for food, clothing or products for human or animal consumption or skin contact. Reseal part used containers and store away properly. Ensure that all containers are properly labeled to prevent accidental ingestion. Do not get in eyes, on skin, or clothing. Do not breathe dust, vapor, mist, or gas. Wash with soap and water before eating, drinking, smoking or using toilet facilities. Remove contaminated clothing and protective gear and launder before reuse. Destroy contaminated leather articles.**
Empty Container Precautions	**Attention! Since empty containers may contain hazardous residues, all hazard precautions given in this MSDS must be observed. Do not reuse empty containers.**
RCRA Class	**NDA**

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Industrial Hygiene		**Follow standard industrial hygiene practices when using this material. Wash thoroughly with soap and water before eating, drinking or smoking.**					
Personal Protective Equipment	**Eye/Face**	**Safety glasses/goggles with side shield in compliance with OSHA regulations recommended.**					
	Skin	**Protective gloves and impervious clothing recommended to prevent skin contact and absorption of this material through the skin. Wear protective equipment as necessary to prevent exposure and personal contact.**					
	Respiratory	**Due to small size (4 oz) and paste form of this product, a special respiratory program is not warranted. A simple dust mask is always a good idea, in case particulates from sanding of cured products nearby become airborne pollute the air operators breathe. Use of good ventilation is also recommended.**					
Exposure Guidelines		Component			Component		
		OSHA, ppm	STEL	PEL	OSHA, ppm	STEL	PEL
			NDA	**NDA**		**NDA**	**NDA**
		ACGIH, ppm, TLV	STEL	TWA	ACGIH, ppm, TLV	STEL	TWA
			NDA	**NDA**		**NDA**	**NDA**
		Comment	**NA**		Comment	**NA**	

Airborne Exposure Guidelines	Component			Component			
	OSHA, ppm	STEL	PEL	OSHA, ppm	STEL	PEL	
		NDA	**NDA**		**NDA**	**NDA**	
	ACGIH, ppm, TLV	STEL	TWA	ACGIH, ppm, TLV	STEL	TWA	
		NDA	**NDA**		**NDA**	**NDA**	
	Comment	**NA**		Comment	**NA**		
Engineering Controls/Ventilation	**Use process enclosures, local exhaust ventilation or other engineering controls to control airborne levels below the TLV; general ventilation for normal use. If exposure does exceed occupational exposure limits, use a NIOSH/MSHA approved respiratory mask to prevent overexposure.**						
Medical Surveillance	**Although not warranted by the use of this product, due to its small size (4oz) and its paste form, medical monitoring of health of employees is a generally good industrial practice, and therefore, recommended.**						
Other Work Practices	**Emergency eye wash fountains, in case of an accident, is the first line of defense. Material spilled on hard surface can be a slipping/falling hazard.**						

9. PHYSICAL AND CHEMICAL PROPERTIES @ 75°F/24°C , Typical

NOTICE: ***This physical and chemical data represents typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.***

Appearance	**Form**	**Paste**	**Paste**
	Color	**Black**	**Yellowish**
	Odor	**No Discernable Odor**	**Faint**
Viscosity, poise		**NDA**	**NDA**
pH In 5% Wt In H_2O		**NDA**	**NDA**
Freezing Point		**NDA**	**NDA**
Solubility In H_2O		**Slight**	**NDA**
Density, g/cc		**1.41**	**1.12**
Boiling Point @ 760 mm Hg		**NDA**	**NDA**
Melting Point		**NDA**	**NDA**
Vapor Pressure, mm Hg		**NDA**	**NDA**
Vapor Density, 1.00 @ Air = 1		**NDA**	**NDA**
Specific Gravity, H_2O=1 @60-90°F		**1.4**	**1.1**
Bulk Density		**NDA**	**NDA**
% Volatiles	**Weight**	**0**	**0**
	Volume	**0**	**0**
Volatile Organic Compounds, g/cc		**None -** *This is a ZERO VOC product*	**None -** *This is a ZERO VOC product*
Evaporation Rate, BuAc = 1		**NDA**	**NDA**
Decomposition Temperature, °C/°F		**NDA**	**NDA**
Ignition, °C/°F		**NDA**	**NDA**

10. STABILITY AND REACTIVITY

Stability	**Chemical**		**This product is stable under recommended storage conditions and normal conditions of use.**	
	Avoid Temperature	**Below**	**50°F/10°C indoors.**	
		Above	**90°F/32°C indoors.**	
	ConditionsTo Avoid		**Contact with excessive temperatures, open flame, sparks, or ignition sources**	
Incompatible Materials To Avoid			**Can react with strong oxidizing agents and mineral acids.**	
Hazardous Combustion Or Decomposition Products			**Carbon monoxide, aldehydes, and acids may be formed during incomplete combustion.**	**Carbon monoxide, carbon dioxide, and oxides of nitrogen.**
			Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Hazardous decomposition products depend on temperature, air supply, and the presence of other materials.	
Hazardous Polymerization			**Will not occur under normal conditions.**	**Will not occur under normal conditions.**
Other			**Some heat is generated when Base is mixed with Solidifier. Use caution when mixing large quantities.**	

11. TOXICOLOGICAL PROPERTIES

Dermal (acute), Rabbit, LD_{50}		NDA	NDA
Oral (acute), Rat, LD_{50}		NDA	NDA
Inhalation (acute) Rat, LC_{50}		NDA	NDA
Irritation	Eye	NDA	NDA
	Skin	NDA	NDA
Sensitization		NDA	NDA
Carcinogenicity		NDA	NDA
Mutagenicity (Effects on Genetic Material)		NDA	NDA
Developmental Toxicity		NDA	NDA
Teratogenicity/Reproductive Toxicity		NDA	NDA
Subchronic Toxicity		NDA	NDA
Other Toxicity		NDA	NDA

12. ECOLOGICAL INFORMATION

This Environmental Effects Summary is written to assist in addressing emergencies created by an accidental spill which might occur during the shipment of this material, and, in general, it is not mean to address discharges to sanitary sewers or publicly owned treatment works. Data for this material have been used to estimate its environmental impact. It has the following properties: When diluted with a large amount of water, this material released directly or indirectly into the environmental is not expected to have a significant impact.

Acute Toxicity	Fish	NDA	NDA
	Invertebrates	NDA	NDA
	Algae	NDA	NDA
	Plants	NDA	NDA
	Sewage Bacteria	NDA	NDA
Bioconcentration		NDA	NDA
Biodegradability		NDA	NDA
Chemical Oxygen Demand		NDA	NDA
Environmental Fate	Movement and Partitioning	NDA	NDA
	Degradation and Persistence	NDA	NDA
	Ecotoxicity	NDA	NDA

13. DISPOSAL CONSIDERATIONS

Disposal	DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws, and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. INTEGRATED POLYMER INDUSTRIES HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS "PRODUCT INFORMATION".
Unused and Uncontaminated Product	Mix Base and Solidifier components and allow overnight cure into a harmless solid. Preferred options include sending to a licensed, permitted, recycler, reclaimer, incinerator, or other thermal destruction device.
Empty Container Precautions	Attention! Since empty containers may contain hazardous residues, all hazard precautions given in this MSDS must be observed. Do not reuse empty containers.
Special Instructions	Be sure to contact the appropriate government agencies if further guidance is required.

14. TRANSPORT INFORMATION

US DOT, 49CFR 172.101

Hazardous Material Proper Shipping Name/Description		**Non-Regulated / Non-Hazardous**	
Primary Hazard Class/Division #		**NDA**	**NDA**
UN/NA ID No		**NDA**	**NDA**
Packaging Group		**NDA**	**NDA**
Technical Names		**NDA**	**NDA**
Marine Pollutant		**NDA**	**NDA**
Hazardous Substance		**NDA**	**NDA**
Reportable Quantity	**CERCLA**	**NDA**	**NDA**
	Substance	**NDA**	**NDA**
	Lb/g	**NDA**	**NDA**
NOS Component		**NDA**	**NDA**
Subsidiary Risk		**NDA**	**NDA**
Hazard Label(s)		**NDA**	**NDA**
Hazard Placard(s)		**NDA**	**NDA**
Emergency Contact		**IPI: 714/434-0800 or CHEMTREC 800/424-9300**	

IMO / IMDG CODE (OCEAN)

Primary Hazard Class/Division #		**NDA**	**NDA**

ICAO / IATA (AIR)

Primary Hazard Class/Division #		**NDA**	**NDA**
Passenger Aircraft	**Pkg. Instr.**	**NDA**	**NDA**
	Max. Net Qty/Pkg	**NDA**	**NDA**
	Actual Net Qty/Pkg	**NDA**	**NDA**
Cargo Aircraft Only	**Pkg. Instr.**	**NDA**	**NDA**
	Max. Net Qty/Pkg	**NDA**	**NDA**
	Actual Net Qty/Pkg	**NDA**	**NDA**
Special Provisions		**NDA**	**A3**

Canada

TDG	**NDA**	**NDA**

European Union

	NDA	**NDA**

15. REGULATORY INFORMATION (*not represented as all-inclusive; selected regulations represented*)

NOTICE: **The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with Federal, State/Provincial, and local laws and regulations. For details on your regulatory requirements, you should contact the appropriate agency in your State, Province, or Country.**

US Federal

		Base	Solidifier
Toxic Substances Control Act (TSCA) Chemical Substance Inventory	**4 Test Rules**	**NDA**	**NDA**
	5(A)(2) SNUR	**This product is not subject to a Significant New Use Rule (SNUR)**	
	5(E) Consent Order	**This product is not subject to a Section 5(e) Consent Order**	
	5 (H)(3) R&D Exempt	**NDA**	**NDA**
	6 Regulation of Existing Chemicals	**NDA**	**NDA**
	7 Imminent Hazards	**NDA**	**NDA**
	8(B) Inventory Status	**All chemicals comprising this product are listed on the TSCA Inventory or are not required to be listed on the TSCA Inventory.**	
	State Right-to-Know	**This product is not known to contain any substances subject to the disclosure requirements of: Calif9rnia, New Jersey, Pennsylvania**	
	12(B) Export Notification	**This product does not contain any chemicals subject to Section 12(b) export notification.**	
Comprehensive	**Chemical Name**	**NDA**	**NDA**

Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 40 CFR 302.4(a)		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
Superfund Amendment and Reauthorization Act of 1986 (SARA), Title III (Emergency Planning Community Right-to-Know (EPCRA))	Section 302, 40 CFR 355 Appendix A, Extremely Hazardous Substances (EHS)	Chemical Name	This product contains no chemicals regulated under Section 302 as extremely hazardous substances	
		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
	Section 304, CERCLA	Chemical Name	This product contains no chemicals regulated under Section 304 as extremely hazardous chemicals for emergency release notification	This product contains no chemicals regulated under Section 304 as extremely hazardous chemicals for emergency release notification
		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
		P-5 Reactive	NDA	NDA
	SARA 311/312, 40 CFR 370.2 Hazard Communication Standard (HCS)	Chemical Name		
		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
	SARA 313, 40 CFR 372.65, Toxic Chemicals List (TCL), Supplier Notification	Chemical Name	IPN-subassembly	IPN-subassembly
		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
Clean Air Act Amendments of 1980, Section 611 (Protection of Stratospheric Ozone)	Non-Volatile	100%; Method: ASTM D1644-88, Method B, 30 min @ 149°C		
	HAP	This product *does* not contain hazardous air pollutants (HAP), as defined by the US Clean Air Act.		
	ODS	This product *does* not contain any Class I or Class II ozone-depleting substances (ODS) as per 40 CFR Part 82.		
Clean Water Act - Priority Pollutants (PP)		This product *does not* contain chemicals listed under the US Clean Water Act Priority Pollutant List.		
Food & Drug Administration: Food Packaging Status		This product has not been cleared by the FDA for use in food packaging and/or other applications as an indirect food additive.		

OSHA	**Hazard Communication Standard 29 CFR 1910.1200**	**This MSDS has been prepared in compliance with this US Federal OSHA standard. This product *IS NOT* considered a hazardous chemical under that standard. Its hazards are:** • **Immediate (acute) health hazard** • **Delayed (chronic) health hazard** • **Fire hazard**	
	Process Safety Management 20CFR 1910	**NDA**	
Resource Conservation and Recovery Act (RCRA), 40 CFR 261, Status		**Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. This product is not considered to be a hazardous waste.**	
EPA	**Hazard Categories**	**NDA**	**NDA**
	Accidental Release Prevention 40 CFR 68	**NDA**	**NDA**
Food, Drugs & Cosmetics Act - Indirect Food Additives (21CFR)		**Not Applicable**	**Not Applicable**
CONEG		**NDA**	**NDA**
CEPA-NPRI		**NDA**	**NDA**
Additional Federal Information		**This product is not subject to a Section 5(f)/6(a) rule**	**This product is not subject to a Section 5(f)/6(a) rule**

US States

General		**The following chemicals are specifically listed by individual states. Other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements, you should contact the appropriate agency in your location.**		
		Chemical Name	**NDA**	**NDA**
		CAS Registry No.	**NDA**	**NDA**
		Concentration	**NDA**	**NDA**
		States	**NDA**	
California	**Safe Drinking Water and Toxic Enforcement Act of 1988 – Prop.65**	The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986		
		This product contains the following substance(s) currently on the list of Known Carcinogens and Reproductive Toxins, and known to the State of California, USA to cause cancer, birth defects, and/or other reproductive harm:		
		No Proposition 65 chemicals exist in this product.		
	SCAQMD) Rule 443.1 (VOCs)	**This is a ZERO VOC material.**		
	Substance List	**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**NDA**	**NDA**
Florida **Substance List**		**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**NDA**	**NDA**
Illinois **Toxic Substances List**		**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	

		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**NDA**	**NDA**
Massachusetts **Right to Know Hazardous Substance List (MSL) (105CMR 670.000)**		**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**NDA**	**NDA**
Minnesota **Hazardous Substance List**		**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**NDA**	**NDA**
New Jersey	**Worker & Community Right-To-Know Act**	**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**NDA**	**NDA**
	Hazardous Substance List	**NJ1, NJ2, NJ3**	**NDA**	
		NJ1 = NJ Special Health Hazard Substance present at greater than or equal to 0.1% **NJ2 = NJ Environmental Hazardous Substance present at greater than or equal to 1.0%** **NJ3 = NJ Workplace Hazardous Substance present at greater than or equal to 1.0%**		
Pennsylvania **Right to Know Hazardous Substance List**		**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**
		Trade Secret Registry #s	**NDA**	**NDA**
		Comment	**Not on Pennsylvania Hazardous Substance List**	**NDA**
		PA1, PA2, PA3	**NDA**	
		PA 1 = PA Hazardous Substance present at greater than or equal to 1.0% **PA 2 = PA Special Hazardous Substance present at greater than or equal to 0.01%** **PA 3 = PA Environmental Hazardous Substance present at greater than or equal to 1.0%**		
Rhode Island **List of Designated Substances**		**Chemical Name**	**This product does not contain any chemicals that are subject to the disclosure requirement**	
		CAS Registry No.	**NDA**	**NDA**
		Common Name	**NDA**	**NDA**
		Upper Bound Concentration %	**NDA**	**NDA**

	Trade Secret Registry #s	**NDA**	**NDA**
	Comment	**NDA**	**NDA**

16. SUPPLEMENTARY

General Comments	**A Material Safety Data Sheet ("MSDS") such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions, in addition to those described herein, are required. INTEGRATED POLYMER INDUSTRIES, INC. must rely on the user to utilize the information we have supplied to develop work practice guidelines and employee instructional programs for the individual operation and regulations. Any health hazard and safety information contained herein should be passed on to your employees. The data in this MSDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. If the material is used as a component in another material, this MSDS information may not be applicable.**
Compliance with All Government Regulations	**It is the user's responsibility to comply with all national, state, and local codes pertaining to the use, handling, dispensing, storage, transportation, and disposal. IPI does not assume responsibility and expressly disclaims liability for any non-compliance.**
Disclaimer of Liability	**The following supercedes buyer's documents. The information in this MSDS was obtained from sources which we believe are reliable and is believed to be accurate but is not warranted to be whether originating with the company or not. No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or designs, data or information set forth. The conditions or methods of use, handling, dispensing, storage, transportation, disposal, and compliance with regulations of various government agencies of the material are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the use, handling, dispensing, storage, transportation, disposal, and compliance with government regulations of the material. Further, buyer and/or enduser expressly understand and agree that the descriptions, designs, data and information furnished by IPI hereunder are given gratis and IPI assumes no obligation or liability for the description, designs, data and information given or results obtained, all such being given and accepted at your risk. This document is generated for the purpose of distributing health, safety, and environmental data. It is not a specification sheet nor should any displayed data be construed as a specification. Some of the information presented and conclusions drawn herein are from sources other than direct test data on the material itself. Nothing herein shall be construed as a recommendation for uses that infringe valid patents or as extending a license for valid patents.**
Label Statement	WARNING! FOR INDUSTRIAL USE BY TRAINED PERSONNEL ONLY! KEEP AWAY FROM CHILDREN. KEEP CONTAINER TIGHTLY CLOSED. KEEP AWAY FROM HEAT, SPARKS, AND FLAME. AVOID BREATHING HIGH VAPOR CONCENTRATIONS. USE ONLY WITH ADEQUATE VENTILATION. PLEASE REFER TO MSDS AND TECHNICAL DATA FOR ADDITIONAL INFORMATION NECESSARY FOR PROPER USE, STORAGE, AND DISPOSAL.
Acronyms	2. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS

CAS REGISTRY NUMBER	**Chemical Abstract Service Registry number and name as it appears in the US Federal EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.**
OSHA	**The Occupational Safety & Health Administration.**
ACGIH	**The American Conference of Governmental Industrial Hygienists.**
PPM	**Parts per Million, 1x 10^{-6}**
PEL	**Permissible Exposure Limit for a chemical in the air as established by The Occupational Safety & Health Administration (OSHA).**
TLV	**Threshold Limit Value for a chemical in the air as established by The American Conference of Government Industrial Hygienists (ACGIH).**
(PEL)TLV:TWA	**The Time-Weighted Average exposure for a normal 8-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed without adverse effect.**

TLV:STEL	**The Short-Term Exposure Limit is 15-minute time-weighted average exposure that should not be exceeded at any time during a workday, even if it the 8-hour TWA is within the TLV.**
TLV:C	**The Ceiling Concentration that should not be exceeded even instantaneously.**
PEL:ACCEPTABLE CEILING CONCENTRATION	**The Concentration not to be exceeded during an 8-hour shift, except for a given time period, and not exceeding the concentration given as the acceptable maximum peak.**
CARCINOGENIC REFERENCES	**Will indicate whether the ingredient has been found to be a (potential) carcinogen by** • **ACGIH (American Conference of Governmental Industrial Hygienists** • **IARC (International Agency for Research on Cancer);** • **NTP (National Toxicology Program) or** • **OSHA (Occupational Safety & Health Administration).**
5. FIRE & EXPLOSION DATA	
FLASH POINT	**Designated by method: CC-Closed Cup, OC-Open Cup.**
NFPA HAZARD CODES	**The US National Fire Protection Association's Hazard Identification System intended to indicate inherent hazards of a chemical under emergency conditions such as fire. The degree of each of three hazards (Health/Flammability/ Reactivity) is rated by a numerical designation ranging from low to high of 0 to 4.**
HMIS HAZARD CODE	**The US National Paint & Coatings Association's Hazard Materials Identification System intended to estimate the inherent hazards of a chemical under normal workplace situations. The degree of each of three hazards (Health/Flammability/Reactivity) is rated by a numerical designation ranging from low to high of 0 to 4.**
7. HANDLING AND STORAGE	
RCRA	**US Resource Conservation and Recovery Act**
11. TOXICOLOGICAL PROPERTIES	
ACUTE LD_{50}/LC_{50}	**The Lethal Dose/Concentration required to kill 50% of a population of test animals by the route of administration indicated.**
14. TRANSPORT INFORMATION	
DOT	**US Department of Transportation**
UN Number	**United Nations Number**
CERCLA	**Comprehensive Environmental Response, Compensation and Liability Act of 1980**
NOS	**Not Otherwise Specified**
NAERG	**North American Emergency Response Guide**
IMO/IMDG	**International Maritime Organization/International Maritime Dangerous Goods**
ICAO/IATA	**International Civil Aviation Organization/International Air Transport Association**
TDG	**Transportation of Dangerous Goods**
MISCELLANEOUS	
NA	**Not Applicable**
NDA	**No Data Available**
NE	**Not Established**
Other	**This MSDS is subject to change without notice, as new information becomes available.**

Thank you for using IPI products and welcome to our growing family of satisfied customers.

3029 South Harbor Blvd, Santa Ana, CA 92704-6448 USA
Tel: 714/434-0800 ext 13
Fax: 714/434-0888
E-Mail: IntegratedPolymerIndustries@msn.com

Integrated Polymer Industries, Inc

BE SAFE! READ OUR PRODUCT SAFETY INFORMATION…AND PASS IT ON. PRODUCT LIABILITY LAW REQUIRES IT.

CO-120 IPI-SuperBarrier™

Zero VOC, IPN-based, ambient cure, brushable, sprayable, corrosion resistant coating

Engineering Data Bulletin 157603 1209003

1. Material Description

- Two component liquid; mixed and applied on demand at jobsite, on properly prepared surfaces
- Goes on metal, concrete, fiberglass, PVC, masonry, brick, wood, and other materials
- Increases fluid flow in pumps, valves, pipes, tanks, and others subjected to erosion-corrosion
- Goes on buildings and structures with equal ease for long lasting high performance
- Excellent bond strength, water and corrosion resistance
- Continuous service: 400F dry ; 200F wet.
- Repairs easily and instantly all fluid handling equipment in place, without requiring complete disassembly, transfer, cranes, forklifts, or extended shutdowns.
- Saves production time, application labor, and materials
- Seamless, tough, and durable
- Normally applied at 16 mils, sometimes even thicker depending on the project requirements

2. Physical & Mechanical Properties

Property	*Unit*	*Value*	*Comments*
Base component, fill weight	g	333	
Solidifier component, fill weight	g	167	
Density	g/cc	1.3	
Base/Solidifier mix ratio, by weight		2/1	
Base/Solidifier mix ratio, by volume		1.6/1	
Coverage per kit, at 16 mils	sf	12	
Potlife, at 75F	minutes	30	Longer when applied on a colder day; Shorter when applied on a warmer day.
Tacky Cure For Recoating , at 75F	Hours	2	
Tack-free Cure, at 75F	Hours	8	
Final Cure, at 75F	Hours 24	24	
Chemical Immersion Cure, at 75F	Days	5	
Adhesion strength , ASTM D1002	psi	2,400	steel / steel

3. Mixing Instructions

Mixing & Application Instructions:
Components are factory proportioned. Mix all of base with all of solidifier. For partial mixes, use the mix ratios for base/solidifier in table below. Transfer solidifier into the base and power mix for 1 minute. Then transfer this mix into a clean container and power mix again for another minute. This "double mixing" insures perfect mix all the time. Apply the mix onto properly prepared metal or concrete surfaces by stiff bristle brush or proper spray equipment.
Allow cure to a sticky stage (minimum 2 hours at 75F), before recoating IPI-SuperBarrier™ with itself or other IPI-Coatings. Observe cure times in the chart above for re-opening the area to service. If in doubt, please contact technical service at 714-434-0800 with any questions or comments.

4. Theory of IPNs

Background	• IPNs ***(inter-penetrating-networks)*** is the next frontier in the high performance materials technology. Academic research work on IPNs dates back to early 1970s, when the founder of IPI was one of the investigators. Application of the IPNs to the coatings technology was solely pioneered by IPI in mid 1980s. Maturing of IPNs into proven industrial alternatives and emergence of IPNs as commercial success took place in the 1990s.
Fundamental Principles	• IPNs are super high performance, hybrid polymers, complex in structure, but simple in principle. IPNs aim to build on the desirable properties of commercial polymers like epoxies, urethanes, acrylics, silicones, etc., while leaving out their poor, undesirable properties. • For example, epoxies are good in adhesion and chemical resistance, but poor in UV resistance and they are mostly brittle. Urethanes, on the other hand, are flexible and tough, but they suffer the draw back of hydrolysis, which allows water ingression over time to cause blisters. Acrylics are great against UV but they can not bond to wet surfaces well and they have shrinkage, flammability, and odor problems. IPNs, therefore, aim to build a polymeric backbone which gets its adhesion and chemical resistance from epoxies, flexibility and toughness from urethanes, and UV resistance from acrylics, among other things, while leaving out the poor properties of these polymers. Topics like what kind of polymers are used as starting materials, what kind of IPNs are built from them, and how this whole process really works, etc. are closely guarded trade secrets. IPI formulates and manufactures many different kinds of materials using IPNs, including but not limited to adhesives, sealants, caulks, mastics, composites, primers, and coatings.

Thank you for your interest in our unique IPN products! For more information and/or samples, please contact us.	• 3029 South Harbor Blvd, Santa Ana, CA 92704-6448 USA • Tel: 714/434-0800 ext 13 • Fax: 714/434-0888 • E-Mail: IntegratedPolymerIndustries@msn.com

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integrated polymer industries, inc.

Be Safe! Read Our Product Safety Information And Pass It On. Product Liability Law Requires It. Before Handling, Please Read And Follow All Instructions Per The Technical Data, Material Safety Data Sheets, and Labels which Are Specifically Incorporated Herein And Are Inseparable For Safe Use, Physical And Health Hazard Information. For Industrial and Commercial Use Only. Not For Sale To General Public. For Professional Application By Trained, Qualified, And Experienced Applicators. This Product Should Not Be Used By Untrained Or Non-Professional Personnel. All Technical Data Subject To Change Without Notice. The Values Shown Are Not Intended For Use In Preparing Specification. Calculated Values Are Shown And May Vary Slightly From The Actual Manufactured Material. Please note that both base and solidifier components are covered in this MSDS. Please contact PTI if you have any questions. Thank you.

MATERIAL SAFETY DATA SHEET

IPI-SuperBarrier™

IPN Based, Zero-VOC, 2-Component, Room-Temperature-Cure, Brushable, Sprayable, Advanced Polymer System, Designed For Coating Aerospace Vehicles & Equipment Subjected To Erosion, Corrosion, Impact, And Heavy Duty Service

VOC = zero (100% solids; no solvents)

Base / Solidifier Mix Ratio, wt: 1.35 / 1 for 242022 (white); 1.18 / 1 for 242044 (blue)

HAZARDOUS MATERIAL INFORMATION SYSTEM (HMIS)					NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)	
	Base	Solidifier	Mixed	Cured		
Fire	1	1	1	0	Health	NDA
Toxicity	1	2	2	0	Flammability	NDA
Reactivity	0	0	2	0	Reactivity	NDA
Special	0	0	0	0		
Target Organs	Eyes, Skin and Respiratory Systems					

Legend: 4 - Extreme, 3 - High, 2 - Moderate, 1 - Slight, 0 - Insignificant

Note: HMIS and NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

	BASE	SOLIDIFIER
1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION		
Material Identity		
Product Trade Name	**IPI-SuperBarrier™**	
Product Codes	**242022 White and 242044 Blue**	
Number Of Components	**2**	
Chemical Name	IPN (interpenetrating polymer network) subassembly containing select reactive sites, built into the pre-polymer backbone, nature and identity of which are trade secrets. Dominant reactive site resembles: Modified 4,4'-Isopropylidenediphenol Epichlorohydrin	IPN (interpenetrating polymer network) subassembly containing select reactive sites, built into the pre-polymer backbone, nature and identity of which are trade secrets. Dominant reactive site resembles: Modified Aliphatic Polyamine
Synonyms	NDA	NDA
Empirical Formula	Proprietary Mixture	Proprietary Mixture
Manufacturer		
Company	Integrated Polymer Industries, Inc.	
Address	3029 South Harbor Blvd., Santa Ana, CA 92704, USA	
IPI Emergency Number	714-434-0800	
24 Hour Emergency Phone	800-424-9300 CHEMTREC	

2. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS

Ingredient 1

Common Name	NDA				NDA			
Chemical Identity	4,4'-Isopropylidenediphenol Epichlorohydrin				2,4,6 Tri(Dimethyaminomethyl)Phenol			
CAS Registry No.	25068-38-6				90-72-2			
Concentrations % By Weight	< 70				<80			
OSHA Hazardous Ingredient	NDA				NDA			
Exposure Limits	Component				Component			
	OSHA, ppm	STEL	PEL		OSHA, ppm	STEL	PEL	
		NDA	NDA			NDA	NDA	
	ACGIH, ppm, TLV	STEL	TWA		ACGIH, ppm, TLV	STEL	TWA	
		NDA	NDA			NDA	NDA	
	Comment	Irritant by skin contact.			Comment	Irritant by skin contact; toxic by ingestion; biologically corrosive. Locked into the molecular network; not free for reaction.		
Carcinogen Status	OSHA	ACGIH	NTP	IARC	OSHA	ACGIH	NTP	IARC
	NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA

Ingredient 2

Common Name	Non-Hazardous Ingredients				Non-Hazardous Ingredients			
Chemical Identity	Information concerning non-hazardous ingredients is considered trade secret.							
CAS Registry No.	NA				NA			
Concentrations % By Weight	NA				NA			
OSHA Hazardous Ingredient	NA				NA			
Exposure Limits	Component	NA			Component	NA		
	OSHA, ppm	STEL	PEL		OSHA, ppm	STEL	PEL	
		NA	NA			NA	NA	
	ACGIH, ppm, TLV	STEL	TWA		ACGIH, ppm, TLV	STEL	TWA	
		NA	NA			NA	NA	
	Comment	NA			Comment	NA		
Carcinogen Status	OSHA	ACGIH	NTP	IARC	OSHA	ACGIH	NTP	IARC
	NA	NA	NA	NA	NA	NA	NA	NA

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING: Prolonged or repeated exposure may cause skin sensitization, nose and throat irritation, and/or other allergic response. Ingestion may cause nausea, vomiting, pain, upset stomach, and diarrhea.

Appearance and Odor	Clear, Amber Liquid with faint odor	242022 White or 242044 Blue, both with faint odor
Flammability	Nonflammable	Nonflammable
Health	May be a skin sensitizer. Avoid skin contact.	
Effects of Overexposures		
Primary Route(s) of Entry	Skin contact, eye contact.	
Eye	Contact may cause sensitization, irritation, or burn.	
Skin	Repeated exposure may cause irritation, skin sensitization, and/or other allergic responses.	
Inhalation	NDA	High concentration of vapors may cause irritation.
Ingestion	NDA	NDA
Systemic (OtherTarget Organ) Effects	NDA	NDA

Signs and Symptoms of Exposure	Acute Effects	Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: gastrointestinal irritation (nausea, vomiting, diarrhea), irritation (nose, throat, respiratory tract), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache).	
	Possible Longer Term Effects	Repeated and/or prolonged exposure may cause allergic reaction/sensitization, adverse respiratory effects (such as cough, shortness of breath), adverse eye effects (such as conjunctivitis or corneal damage). Effects from inhalation of vapors may be delayed. Repeated and/or prolonged exposure to low concentrations of vapor may cause sore throat, eye irritation.	
Medical Conditions Generally Aggravated by Exposure		Asthma, chronic respiratory disease (e.g. bronchitis, emphysema), eye disease.	
Developmental Information		NDA	NDA
Teratology (Birth Defects)		NDA	NDA
Reproductive Effects		NDA	NDA
Other Health Effects		NDA	NDA
Chronic		Prolonged or repeated exposure may cause asthma, skin sensitization, and/or other allergic response.	Solidifier will cause burns. Prolonged or repeated exposure may cause asthma, skin sensitization, and/or other allergic response.
Carcinogenicity		This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.	

4. FIRST AID	
Eye	Immediately flush eyes with water and continue washing for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.
Skin	Immediately wash skin with soap and water. Remove contaminated clothing. Obtain medical attention if irritation persists.
Inhalation	Remove to fresh air. Obtain medical attention if symptoms persist.
Ingestion	Seek immediate medical attention. If individual is drowsy or unconscious, do not give anything by mouth. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.
Overexposure Effects	Overexposure to this material can cause moderate skin and severe eye irritation. Can be harmful if ingested.
Medical Conditions generally Aggravated by Exposure	Asthma, chronic respiratory disease (e.g. bronchitis, emphysema), eye disease.
Note to Physicians	Treatment based on judgment of the physician in response to reactions of the patient. No incidents of overexposure by any route have ever been reported since 1985, establishment of the manufacturer, which leads manufacturer to believe that, when used properly by generally accepted good industrial practices, there should not be any threat to health of any enduser. All information presented here are precautionary, not based on real life incidents. While possibility of an accident is always there, probability due to small size of product and its paste form, is quite low.
Additional Information	Promptly remove and discard contaminated clothing.

5. FIRE & EXPLOSION DATA				
Flammable Properties	Flash Point		>400°F/204°C	>277°F/136°C
	Method		Pensky-Martens Closed Cup (ASTM D-93)	Pensky-Martens Closed Cup (ASTM D-93)
	Autoignition Temp.		NDA	NDA
Flammability Limit/ % Volume in Air		Lower (LFL)	NDA	NDA
		Upper (UFL)	NDA	NDA
Explosive Limit		Lower (LEL)	NDA	NDA
		Upper (UEL)	NDA	NDA
Fire Hazard Classification (OSHA/NFPA)			NDA	NDA
Fire and Explosion Hazards			No unusual hazards. Base will not burn unless preheated.	Heavy smoke and toxic fumes will evolve when in fire.
Hazardous Combustion and Decomposition Products			NDA	NO, NO_2
Extinguishing Media			Foam, CO_2, Dry Chemicals, Water	
Fire Fighting Procedures			To extinguish combustible residues of this product use carbon dioxide, dry chemical, or foam.	

Protective Equipment for Firefighters	Self-contained breathing apparatus (SCBA) and protective fire fighting clothing (fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.
NFPA Hazard Codes	See Chart Page 1.
HMIS Hazard Codes	See Chart Page 1.
Unusual Hazards	There are no known unusual fire or explosion hazards. May generate toxic or irritating combustion products.

6. ACCIDENTAL RELEASE MEASURES (*see Section 15 for Regulatory Information*)	
Evacuation	Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
Containment Techniques	Stop the leak/spill, if possible. Remove source of heat, flame, impact, or electricity. Ventilate the space involved. Construct a dike to prevent spreading. May be a slipping hazard.
Clean-Up Procedures	Spills should be contained, solidified, and placed in suitable containers for disposal in a licensed facility. Soak up small spills with absorbent material. React Base with Solidifier or vice versa into harmless solid.
Steps To Be Taken In Case Material Is Released Or Spilled	Protect People! Protect the Environment! Wear suitable protective equipment. Avoid contact with eyes and skin. Wear respirator and protective clothing as appropriate. Breathing of vapors must be avoided. Remove and discard contaminated clothing. Avoid discharge to natural waters. Prevent run-off to sewer/public waters. If run-off occurs, notify proper authorities as required that a spill has occurred. Follow confined space entry procedures: ASTM D-4276 and OSHA (29 CFR 1910.146)
Reporting	Kits too small for RQ to be applicable.

7. HANDLING AND STORAGE	
Shelf Life	1 year, cool and dry
Storage Conditions	Cool and dry
Handling And Safety Precautions	Wear gloves
Empty Container Precautions	Wipe containers with paper towel before discarding them. Paper towel with base and paper towel with solidifier are placed together before discarding.
RCRA Class	NDA

8. EXPOSURE CONTROLS / PERSONAL PROTECTION							
Industrial Hygiene		Follow standard industrial hygiene practices when using this material. Wash thoroughly with soap and water before eating, drinking or smoking.					
Personal Protective Equipment	Eye/Face	Safety glasses/goggles with side shield in compliance with OSHA regulations recommended.					
	Skin	Protective gloves and impervious clothing recommended to prevent skin contact and absorption of this material through the skin. Wear protective equipment as necessary to prevent exposure and personal contact.					
	Respiratory	Due to small size and paste form of this product, a special respiratory program is not warranted. A dust mask is always a good idea, in case particulates from sanding of cured products nearby become airborne and pollute the air operators breathe. Use of good ventilation is also recommended.					
Exposure Guidelines		Component			Component		
		OSHA, ppm	STEL	PEL	OSHA, ppm	STEL	PEL
			NDA	NDA		NDA	NDA
		ACGIH, ppm, TLV	STEL	TWA	ACGIH, ppm, TLV	STEL	TWA
			NDA	NDA		NDA	NDA
		Comment	NA		Comment	NA	
Airborne Exposure Guidelines		Component			Component		
		OSHA, ppm	STEL	PEL	OSHA, ppm	STEL	PEL
			NDA	NDA		NDA	NDA
		ACGIH, ppm, TLV	STEL	TWA	ACGIH, ppm, TLV	STEL	TWA
			NDA	NDA		NDA	NDA
		Comment	NA		Comment	NA	
Engineering Controls/Ventilation		Use process enclosures, local exhaust ventilation or other engineering controls to control airborne levels below the TLV; general ventilation for normal use. If exposure does exceed occupational exposure limits, use a NIOSH/MSHA approved respiratory mask to prevent overexposure.					
Medical Surveillance		Although not warranted by the use of this product, due to its small size (4oz) and its paste form, medical monitoring of health of employees is a generally good industrial practice, and therefore, recommended.					
Other Work Practices		Emergency eye wash fountains, in case of an accident, is the first line of defense. Material spilled on hard surface can be a slipping/falling hazard.					

9. PHYSICAL AND CHEMICAL PROPERTIES @ 75°F/24°C , Typical				
NOTICE: This physical and chemical data represents typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.				
Appearance	Form		Clear Liquid	Clear Liquid
	Color		Amber	Amber
	Odor		Faint	Faint
Viscosity, poise			NDA	NDA
Ph In 5% Wt In H_2O			7.0	9.5-10.0
Freezing Point			NDA	NDA
Solubility In H_2O			Nil	Moderate
Density, g/cc			1.12	1.16
Boiling Point @ 760 mm Hg			NDA	>350°F/177°C
Melting Point			NDA	NDA
Vapor Pressure, mm Hg			Nil @ 78°F/26°C	<1 @ 104°F/40°C
Vapor Density, 1.00 @ Air = 1			>1	NDA
Specific Gravity, H_2O=1 @60-90°F			1.12	1.16
Bulk Density			NDA	NDA
% Volatiles	Weight		0	0
	Volume		0	0
Volatile Organic Compounds, g/cc			None -*This is a ZERO VOC product*	None -*This is a ZERO VOC product*
Evaporation Rate, BuAc = 1			NDA	NDA
Decomposition Temperature, °C/°F			NDA	NDA
Ignition, °C/°F			NDA	NDA

10. STABILITY AND REACTIVITY				
Stability	Chemical		This product is stable under recommended storage conditions and normal conditions of use.	
	Avoid Temperature	Below	50°F/10°C indoors.	
		Above	90°F/32°C indoors.	
	ConditionsTo Avoid		Contact with excessive temperatures, open flame, sparks, or ignition sources	
Incompatible Materials To Avoid			Can react with strong oxidizing agents and mineral acids.	
Hazardous Combustion Or Decomposition Products			Carbon monoxide, aldehydes, and acids may be formed during incomplete combustion.	Carbon monoxide, carbon dioxide, and oxides of nitrogen.
			Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Hazardous decomposition products depend on temperature, air supply, and the presence of other materials.	
Hazardous Polymerization			Will not occur under normal conditions.	Will not occur under normal conditions.
Other			Some heat is generated when Base is mixed with Solidifier. Use caution when mixing large quantities.	

11. TOXICOLOGICAL PROPERTIES			
Dermal (acute), Rabbit, LD_{50}		>20g/Kg	669mg/Kg
Oral (acute), Rat, LD_{50}		11.4g/Kg	414mg/Kg
Inhalation (acute) Rat, LC_{50}		No deaths in saturated air for eight hours	NDA
Irritation	Eye	NDA	NDA
	Skin	NDA	NDA
Sensitization		Prolonged or repeated exposure may cause skin sensitization, nose and throat irritation, and/or other allergic response. Ingestion may cause nausea, vomiting, pain, upset stomach, and diarrhea.	
Carcinogenicity		NDA	NDA
Mutagenicity (Effects on Genetic Material)		NDA	NDA
Developmental Toxicity		NDA	NDA
Teratogenicity/Reproductive Toxicity		NDA	NDA
Subchronic Toxicity		NDA	NDA
Other Toxicity		NDA	NDA

12. ECOLOGICAL INFORMATION

This Environmental Effects Summary is written to assist in addressing emergencies created by an accidental spill which might occur during the shipment of this material, and, in general, it is not mean to address discharges to sanitary sewers or publicly owned treatment works. Data for this material have been used to estimate its environmental impact. It has the following properties: When diluted with a large amount of water, this material released directly or indirectly into the environmental is not expected to have a significant impact.

Acute Toxicity	Fish	NDA	NDA
	Invertebrates	NDA	NDA
	Algae	NDA	NDA
	Plants	NDA	NDA
	Sewage Bacteria	NDA	NDA
Bioconcentration		NDA	NDA
Biodegradability		NDA	NDA
Chemical Oxygen Demand		NDA	NDA
Environmental Fate	Movement and Partitioning	NDA	NDA
	Degradation and Persistence	NDA	NDA
	Ecotoxicity	NDA	NDA

13. DISPOSAL CONSIDERATIONS

Disposal	DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws, and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. INTEGRATED POLYMER INDUSTRIES HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS "PRODUCT INFORMATION".
Unused and Uncontaminated Product	Mix Base and Solidifier components and allow overnight cure into a harmless solid. Preferred options include sending to a licensed, permitted, recycler, reclaimer, incinerator, or other thermal destruction device.
Empty Container Precautions	Attention! Since empty containers may contain hazardous residues, all hazard precautions given in this MSDS must be observed. Do not reuse empty containers.
Special Instructions	Be sure to contact the appropriate government agencies if further guidance is required.

14. TRANSPORT INFORMATION

US DOT, 49CFR 172.101

Hazardous Material Proper Shipping Name/Description		Non-Regulated / Non-Hazardous	
Reportable Quantity	CERCLA	NDA	NDA
	Substance	NDA	NDA
	Lb/g	NDA	NDA
NOS Component		NDA	NDA
Subsidiary Risk		NDA	NDA
Hazard Label(s)		NDA	NDA
Hazard Placard(s)		NDA	NDA
Emergency Contact		CHEMTREC 800/424-9300	

15. REGULATORY INFORMATION (*not represented as all-inclusive; selected regulations represented*)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with Federal, State/Provincial, and local laws and regulations. For details on your regulatory requirements, you should contact the appropriate agency in your State, Province, or Country.

US Federal

			Base	Solidifier
Toxic Substances Control Act (TSCA) Chemical Substance Inventory		4 Test Rules	NDA	NDA
		5(A)(2) SNUR	This product is not subject to a Significant New Use Rule (SNUR)	
		5(E) Consent Order	This product is not subject to a Section 5(e) Consent Order	
		5 (H)(3) R&D Exempt	NDA	NDA
		6 Regulation of Existing Chemicals	NDA	NDA
		7 Imminent Hazards	NDA	NDA
		8(B) Inventory Status	All chemicals comprising this product are listed on the TSCA Inventory or are not required to be listed on the TSCA Inventory.	
		State Right-to-Know	This product is not known to contain any substances subject to the disclosure requirements of: California, New Jersey, Pennsylvania	
		12(B) Export Notification	This product does not contain any chemicals subject to Section 12(b) export notification.	
Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 40 CFR 302.4(a)		Chemical Name	NDA	NDA
		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
Superfund Amendment and Reauthorization Act of 1986 (SARA), Title III (Emergency Planning Community Right-to-Know (EPCRA))	Section 302, 40 CFR 355 Appendix A, Extremely Hazardous Substances (EHS)	Chemical Name	This product contains no chemicals regulated under Section 302 as extremely hazardous substances	
		CAS Registry No.	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Reportable Quantity, lb/g	NDA	NDA
		Threshold Planning Qty, lb/g	NDA	NDA
		Category	NDA	NDA
Clean Air Act Amendments of 1980, Section 611 (Protection of Stratospheric Ozone)	Non-Volatile	100%; Method: ASTM D1644-88, Method B, 30 min @ 149°C		
	HAP	This product *does* not contain hazardous air pollutants (HAP), as defined by the US Clean Air Act.		
	ODS	This product *does* not contain any Class I or Class II ozone-depleting substances (ODS) as per 40 CFR Part 82.		
Clean Water Act - Priority Pollutants (PP)		This product *does not* contain chemicals listed under the US Clean Water Act Priority Pollutant List.		
Food & Drug Administration: Food Packaging Status		This product has not been cleared by the FDA for use in food packaging and/or other applications as an indirect food additive.		

OSHA	Hazard Communication Standard 29 CFR 1910.1200	This MSDS has been prepared in compliance with this US Federal OSHA standard. This product IS NOT considered a hazardous chemical under that standard.		
	Process Safety Management 20CFR 1910	NDA		
Resource Conservation and Recovery Act (RCRA), 40 CFR 261, Status		Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. This product is not considered to be a hazardous waste.		
EPA	Hazard Categories	NDA	NDA	
	Accidental Release Prevention 40 CFR 68	NDA	NDA	
Additional Federal Information		This product is not subject to a Section 5(f)/6(a) rule	This product is not subject to a Section 5(f)/6(a) rule	
US States				
General		The following chemicals are specifically listed by individual states. Other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements, you should contact the appropriate agency in your location.		
		Chemical Name	NDA	NDA
		CAS Registry No.	NDA	NDA
		Concentration	NDA	NDA
		States	NDA	
California	Safe Drinking Water and Toxic Enforcement Act of 1988 – Prop.65	The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986		
		This product contains the following substance(s) currently on the list of Known Carcinogens and Reproductive Toxins, and known to the State of California, USA to cause cancer, birth defects, and/or other reproductive harm:		
		No Proposition 65 chemicals exist in this product.		
	SCAQMD) Rule 443.1 (VOCs)	This is a ZERO VOC material.		
	Substance List	Chemical Name	This product does not contain any chemicals that are subject to the disclosure requirement	
		CAS Registry No.	NDA	NDA
		Common Name	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Trade Secret Registry #s	NDA	NDA
		Comment	NDA	NDA
		CAS Registry No.	NDA	NDA
		Common Name	NDA	NDA
		Upper Bound Concentration %	NDA	NDA
		Trade Secret Registry #s	NDA	NDA
		Comment	NDA	NDA

16. SUPPLEMENTARY		
General Comments	A Material Safety Data Sheet ("MSDS") such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions, in addition to those described herein, are required. INTEGRATED POLYMER INDUSTRIES, INC. must rely on the user to utilize the information we have supplied to develop work practice guidelines and employee instructional programs for the individual operation and regulations. Any health hazard and safety information contained herein should be passed on to your employees. The data in this MSDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. If the material is used as a component in another material, this MSDS information may not be applicable.	
Compliance with All Government Regulations	It is the user's responsibility to comply with all national, state, and local codes pertaining to the use, handling, dispensing, storage, transportation, and disposal. IPI does not assume responsibility and expressly disclaims liability for any non-compliance.	
Disclaimer of Liability	The following supercedes buyer's documents. The information in this MSDS was obtained from sources which we believe are reliable and is believed to be accurate but is not warranted to be whether originating with the company or not. No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or designs, data or information set forth. The conditions or methods of use, handling, dispensing, storage, transportation, disposal, and compliance with regulations of various government agencies of the material are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the use, handling, dispensing, storage, transportation, disposal, and compliance with government regulations of the material. Further, buyer and/or enduser expressly understand and agree that the descriptions, designs, data and information furnished by IPI hereunder are given gratis and IPI assumes no obligation or liability for the description, designs, data and information given or results obtained, all such being given and accepted at your risk. This document is generated for the purpose of distributing health, safety, and environmental data. It is not a specification sheet nor should any displayed data be construed as a specification. Some of the information presented and conclusions drawn herein are from sources other than direct test data on the material itself. Nothing herein shall be construed as a recommendation for uses that infringe valid patents or as extending a license for valid patents.	
Label Statement	WARNING! FOR INDUSTRIAL USE BY TRAINED PERSONNEL ONLY! KEEP AWAY FROM CHILDREN. KEEP CONTAINER TIGHTLY CLOSED. KEEP AWAY FROM HEAT, SPARKS, AND FLAME. AVOID BREATHING HIGH VAPOR CONCENTRATIONS. USE ONLY WITH ADEQUATE VENTILATION. PLEASE REFER TO MSDS AND TECHNICAL DATA FOR ADDITIONAL INFORMATION NECESSARY FOR PROPER USE, STORAGE, AND DISPOSAL.	
Acronyms	2. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS	
	CAS REGISTRY NUMBER	Chemical Abstract Service Registry number and name as it appears in the US Federal EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
	OSHA	The Occupational Safety & Health Administration.
	ACGIH	The American Conference of Governmental Industrial Hygienists.
	PPM	Parts per Million, $1x\ 10^{-6}$
	PEL	Permissible Exposure Limit for a chemical in the air as established by The Occupational Safety & Health Administration (OSHA).
	TLV	Threshold Limit Value for a chemical in the air as established by The American Conference of Government Industrial Hygienists (ACGIH).
	(PEL)TLV:TWA	The Time-Weighted Average exposure for a normal 8-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed without adverse effect.
	TLV:STEL	The Short-Term Exposure Limit is 15-minute time-weighted average exposure that should not be exceeded at any time during a workday, even if it the 8-hour TWA is within the TLV.
	TLV:C	The Ceiling Concentration that should not be exceeded even instantaneously.
	PEL:ACCEPTABLE CEILING CONCENTRATION	The Concentration not to be exceeded during an 8-hour shift, except for a given time period, and not exceeding the concentration given as the acceptable maximum peak.

	CARCINOGENIC REFERENCES	Will indicate whether the ingredient has been found to be a (potential) carcinogen by • ACGIH (American Conference of Governmental Industrial Hygienists • IARC (International Agency for Research on Cancer); • NTP (National Toxicology Program) or • OSHA (Occupational Safety & Health Administration).
	5. FIRE & EXPLOSION DATA	
	FLASH POINT	Designated by method: CC-Closed Cup, OC-Open Cup.
	NFPA HAZARD CODES	The US National Fire Protection Association's Hazard Identification System intended to indicate inherent hazards of a chemical under emergency conditions such as fire. The degree of each of three hazards (Health/Flammability/ Reactivity) is rated by a numerical designation ranging from low to high of 0 to 4.
	HMIS HAZARD CODE	The US National Paint & Coatings Association's Hazard Materials Identification System intended to estimate the inherent hazards of a chemical under normal workplace situations. The degree of each of three hazards (Health/Flammability/Reactivity) is rated by a numerical designation ranging from low to high of 0 to 4.
	7. HANDLING AND STORAGE	
	RCRA	US Resource Conservation and Recovery Act
	11. TOXICOLOGICAL PROPERTIES	
	ACUTE LD_{50}/LC_{50}	The Lethal Dose/Concentration required to kill 50% of a population of test animals by the route of administration indicated.
	14. TRANSPORT INFORMATION	
	DOT	US Department of Transportation
	UN Number	United Nations Number
	CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
	NOS	Not Otherwise Specified
	NAERG	North American Emergency Response Guide
	IMO/IMDG	International Maritime Organization/International Maritime Dangerous Goods
	ICAO/IATA	International Civil Aviation Organization/International Air Transport Association
	TDG	Transportation of Dangerous Goods
	MISCELLANEOUS	
	NA	Not Applicable
	NDA	No Data Available
	NE	Not Established
Other	This MSDS is subject to change without notice, as new information becomes available.	
MSDS Prepared By	Ergun Kirlikovali	
MSDS Effective Date	January 2002	

Technical Data
JOTACOTE PSO

Product description
Jotacote PSO is a two-pack polysiloxane topcoat with excellent gloss and colour retention.

Recommended use
As topcoat over an epoxy system where a durable, high gloss finish is required in aggressive atmospheric exposure.

Film thickness and spreading rate

	Minimum	Maximum	Typical
Film thickness, dry (µm)	60	200	75
Film thickness, wet (µm)	85	275	105
Theoretical spreading rate (m^2/l)	11,8	3,6	9,5

Physical properties

Colour	According to colour card and Multicolor tinting system (MCI)
Solids (vol %)*	72 ± 2
Flash point	30°C ± 2 (Setaflash)
Gloss	Glossy
Gloss retention	Excellent
Water resistance	Very good
Abrasion resistance	Very good
Solvent resistance	Very good
Chemical resistance	Very good
Flexibility	Very good

***Measured according to ISO 3233:1998 (E)

Surface preparation

All surfaces should be clean, dry and free from contamination. The surface should be assessed and treated in accordance with ISO 8504.

Coated surfaces
Clean, dry and undamaged compatible primer. Contact your local Jotun office for more information.

Other surfaces
The coating may be used on other substrates. Please contact your local Jotun office for more information.

Condition during application
The temperature of the substrate should be minimum 5°C and at least 3°C above the dew point of the air, temperature and relative humidity measured in the vicinity of the substrate. Good ventilation is usually required in confined areas to ensure proper drying. The coating should not be exposed to oil, chemicals or mechanical stress until fully cured.

Application methods

Spray	Use airless spray
Brush	Recommended for stripe coating and small areas, care must be taken to achieve the specified dry film thickness.

Application data

Mixing ratio (volume)	1,8 parts of Comp. A (base) to be mixed thoroughly with 1 part Comp. B (curing agent).
Pot life (23°C)	6 hours (Reduced at higher temp.).
Thinner/Cleaner	Jotun Thinner No. 26
Guiding data airless spray	
Pressure at nozzle	15 MPa (150 kp/cm² 2100 psi).
Nozzle tip	0.33-0.46 mm (0.013-0.018").
Spray angle	40-80°
Filter	Check to ensure that filters are clean.

Drying time

Drying times are generally related to air circulation, temperature, film thickness and number of coats, and will be affected correspondingly. The figures given in the table are typical with:

* Good ventilation (Outdoor exposure or free circulation of air)
* Typical film thickness
* One coat on top of inert substrate

Substrate temperature	**5°C**	**10°C**	**23°C**	**40°C**
Surface dry	6 h	5 h	3,5 h	2 h
Through dry	8 h	7 h	4 h	3 h
Cured	15 d	10 d	5 d	3 d
Dry to recoat, minimum	8 h	7 h	4 h	3 h
Dry to recoat, maximum [1]				

1. The surface must be free from any chalking or any other contamination and if necessary, sufficiently roughened prior to application.

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.

Typical paint system

Resist 86 or Barrier	1 x 75 µm	(Dry Film Thickness)
Jotamastic Plus	1 x 250 µm	(Dry Film Thickness)
Jotacote PSO	**1 x 75 µm**	**(Dry Film Thickness)**

Other systems may be specified, depending on area of use

Storage

The product must be stored in accordance with national regulations. Storage conditions are to keep the containers in a dry, cool, well ventilated space and away from source of heat and ignition. Containers must be kept tightly closed.
Shelf LIfe Comp. A: 2 years
Shelf LIfe Comp. B: 1 year

Handling

Handle with care. Stir well before use.

Packing size

20 litre unit: 12,8 litres Comp. A (base) in a 20 litre container and 7,2 litres Comp. B (curing agent) in a 10 litre container
or
5 litre unit: 3,2 litres Comp. A (base) in a 5 litre container and 1,8 litres Comp. B (curing agent) in a 3 litre container.

Packing may vary from country to country according to local requirements.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not breathe or inhale mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

For detailed information on the health and safety hazards and precautions for use of this product, we refer to the Material Safety Data Sheet.

DISCLAIMER

The information in this data sheet is given to the best of our knowledge based on laboratory testing and practical experience. However, as the product is often used under conditions beyond our control, we cannot guarantee anything but the quality of the product itself. We reserve the right to change the given data without notice.

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Jotun is a World Wide company with factories, sales offices and stocks in more than 50 countries. For your nearest local Jotun address please contact the nearest regional office or visit our website at www.jotun.com

ISSUED 1 APRIL 2003 BY JOTUN PAINTS
THIS DATA SHEET SUPERSEDES THOSE PREVIOUSLY ISSUED

PDF Version :

SAFETY DATA SHEET

Jotacote PSO - Comp. A

1. Identification of the substance/preparation and of the company/undertaking

Product Name and/or Code : **Jotacote PSO - Comp. A**

Label No. : 3357

Supplier/Manufacturer : Jotun Paints (Europe) Ltd.
Stather Road
Flixborough, Scunthorpe
North Lincolnshire
DN15 8RR
England

Tel: +44 17 24 40 00 00
Fax: +44 17 24 40 01 00

Emergency telephone number : Office phone/national poison centre. Office phone: +44 191 28 64 488

Product Use : Coatings: Solvent-borne.

2. Composition/information on ingredients

Chemical name*	CAS no.	EC Number	%	Classification
siloxanes and silicones, di-me, methoxy ph, polymers with ph silsesquioxanes, methoxy-terminated	68957-04-0		10-25	Xn; R22
n-butyl acetate	123-86-4	204-658-1	2.5-10	R10 R66, 67
Solvent naphtha (petroleum), light arom.	64742-95-6	265-199-0	2.5-10	R10 Xn; R65 Xi; R37 R66, 67 N; R51/53
decanedioic acid, bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester	41556-26-7	255-437-1	0-1	R43 N; R50/53
poly(oxy-1,2-ethanediyl), .alpha.-[3-[3-(2h-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-o:	104810-48-2	400-830-7	0-1	R43 N; R51/53
decanedioic acid, methyl 1,2,2,6,6-pentamethyl-4-piperidinyl ester	82919-37-7	280-060-4	0-1	R43 N; R50/53
White spirit, reg.(17-22% aromates)	64742-82-1	265-185-4	0-1	R10 Xn; R65 R66, 67 N; R51/53
See Section 16 for the full text of the R Phrases declared above.				

*** Occupational Exposure Limit(s), if available, are listed in Section 8.**

3. Hazards identification

The preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

Flammable.
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

4. First-aid measures

First-Aid measures

General : In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Give nothing by mouth. If unconscious place in recovery position and seek medical advice.

Skin contact : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.

Eye Contact : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open.

Ingestion : If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do not induce vomiting.

5. Fire-fighting measures

Extinguishing Media : Recommended: alcohol resistant foam, CO2, powders, water spray.
Not to be used : waterjet.

Recommendations : Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not release runoff from fire to sewers or waterways.

6. Accidental release measures

Personal Precautions : Exclude sources of ignition and ventilate the area. Avoid breathing vapour or mist. Refer to protective measures listed in sections 7 and 8.

Spill : Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13). Do not allow to enter drains or watercourses. Clean preferably with a detergent; avoid use of solvents. If the product contaminates lakes, rivers or sewage, inform appropriate authorities in accordance with local regulations.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

7. Handling and storage

Handling : Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits.

In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard.

To dissipate static electricity during transfer, earth drum and connect to receiving container with bonding strap. Operators should wear anti-static footwear and clothing and floors should be of the conducting type.

Keep container tightly closed. Keep away from heat, sparks and flame. No sparking tools should be used.

Avoid contact with skin and eyes. Avoid the inhalation of dust, particulates and spray mist arising from the application of this preparation. Avoid inhalation of dust from sanding.

Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking.

Put on appropriate personal protective equipment (see Section 8).

Never use pressure to empty : container is not a pressure vessel. Always keep in containers of same material as the original one.

Comply with the health and safety at work laws.

When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all cases. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.

Storage : Store in accordance with local regulations. Observe label precautions. Store in a cool, well-ventilated area away from incompatible materials and ignition sources.

Keep away from: oxidizing agents, strong alkalis, strong acids.
No smoking. Prevent unauthorised access. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Do not empty into drains..

8. Exposure controls/personal protection

Engineering measures : Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Ingredient Name	Occupational Exposure Limits
siloxanes and silicones, di-me, methoxy ph, polymers with ph silsesquioxanes, methoxy-terminated	Not available.
n-butyl acetate	**EH40-OES (United Kingdom (UK), 2002). Notes: OES** STEL: 966 mg/m^3 15 minute(s). STEL: 200 ppm 15 minute(s). TWA: 724 mg/m^3 8 hour(s). TWA: 150 ppm 8 hour(s).
Solvent naphtha (petroleum), light arom.	**EH40-MEL (United Kingdom (UK), 2001).** TWA: 25 ppm 8 hour(s). TWA: 120 mg/m^3 8 hour(s).
decanedioic acid, bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester	Not available.
poly(oxy-1,2-ethanediyl), .alpha.-[3-[3-(2h-benzotriazol-2-yl)-5-(1,1-dimeth	Not available.
decanedioic acid, methyl 1,2,2,6,6-pentamethyl-4-piperidinyl ester	Not available.

White spirit, reg.(17-22% aromates) **EH40-MEL (United Kingdom (UK), 2001).**
TWA: 100 ppm 8 hour(s).
TWA: 566 mg/m^3 8 hour(s).
STEL: 150 ppm 15 minute(s).
STEL: 850 mg/m^3 15 minute(s).

Personal protective equipment

Respiratory system : If workers are exposed to concentrations above the exposure limit they must use appropriate, certified respirators. Use respiratory mask with charcoal and dust filter when spraying this product (as filter combination A2-P2). In confined spaces use compressed air or fresh air respiratory equipment. When use of roller or brush, consider use of charcoalfilter (A2).

Skin and body : Personnel should wear anti-static clothing made of natural fibre or of high temperature resistant synthetic fibre.

Hands : For prolonged or repeated handling, use gloves: polyvinyl alcohol or neoprene.

Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.

Eyes : Use safety eyewear designed to protect against splash of liquids.

9. Physical and chemical properties

Physical state : Liquid.

Odour : Characteristic.

Colour : Various colours.

Flash point : Closed cup: 31°C (87.8°F).

pH : Not applicable.

Density : 1.5 g/cm^3

Vapour density : The highest known value is 4 (Air = 1) (n-butyl acetate).

Solubility : Insoluble in cold water.

10. Stability and reactivity

Stable under recommended storage and handling conditions (see section 7).

Hazardous Decomposition Products: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

Keep away from the following materials in order to avoid strong exothermic reactions: oxidizing agents, strong alkalis, strong acids.

11. Toxicological information

There are no data available on the preparation itself.

Exposure to component solvents vapours concentration in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on kidney, liver and central nervous system. Solvents may cause some of the above effects by absorption through the skin. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin. The liquid splashed in the eyes may cause irritation and reversible damage.

Contains (decanedioic acid, bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester, decanedioic acid, methyl 1,2,2,6,6-pentamethyl-4-piperidinyl ester, poly(oxy-1,2-ethanediyl), .alpha.-[3-[3-(2h-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-.omega.-hydroxy-). May produce an allergic reaction.

12. Ecological information

There are no data available on the preparation itself.
Do not allow to enter drains or watercourses.

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is not classified as dangerous for the environment, but contains substance(s) dangerous for the environment. See section 2 for details.

Ecotoxicity Data

Ingredient Name	Species	Period	Result
n-butyl acetate	Pimephales promelas (EC50)	48 hours	19 mg/l
	Pimephales promelas (LC50)	96 hours	18 mg/l
	Lepomis macrochirus (LC50)	96 hours	100 mg/l
Solvent naphtha (petroleum), light arom.	Fish (LC50)	96 hours	<10 mg/l
	Daphnia (EC50)	48 hours	<10 mg/l
	Algae (IC50)	72 hours	<10 mg/l
decanedioic acid,	Fish (LC50)	96 hours	<1 mg/l
bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester	Daphnia (EC50)	48 hours	<100 mg/l
poly(oxy-1,2-ethanediyl),	Fish (LC50)	96 hours	2.8 mg/l
.alpha.-[3-[3-(2h-benzotriazol-2-yl)-5-(1,1-dimetl	Daphnia (EC50)	48 hours	3.8 mg/l
	Algae (IC50)	72 hours	>9 mg/l
decanedioic acid, methyl	Fish (LC50)	96 hours	<1 mg/l
1,2,2,6,6-pentamethyl-4-piperidinyl ester	Daphnia (EC50)	48 hours	<100 mg/l
White spirit, reg.(17-22% aromates)	Fish (LC50)	96 hours	<10 mg/l
	Daphnia (EC50)	48 hours	<10 mg/l
	Algae (IC50)	72 hours	<10 mg/l

Ecological information

Ingredient Name	Persistence/degradability						Bioaccumulative potential		
	BOD_5	COD	ThOD	Aquatic Half-life	Photolysis	Biodegradability	$LogP_{ow}$	BCF	Potential
Solvent naphtha (petroleum), light arom.						Not readily			
decanedioic acid, bis(1,2,2,6,6-pentameth ester						Not readily			
poly(oxy-1,2-ethanediyl), .alpha.-[3-[3-(2h-benzot						Not readily			
decanedioic acid, methyl 1,2,2,6,6-pentamethyl-4 ester						Not readily			
White spirit, reg.(17-22% aromates)						Readily			

13. Disposal considerations

Do not allow to enter drains or watercourses. Material and/or container must be disposed of as hazardous waste.

European Waste Catalogue (EWC) : 08 00 00 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS

14. Transport information

International transport regulations

Regulatory Information	UN number	Proper shipping name	Class	Packing group	Label	Additional Information
ADR/RID Class	1263	Paint	3	III		Hazard identification number 30
IMDG Class	1263	Paint.	3	III		Emergency Schedules (EmS) F-E, S-E Marine pollutant No.
IATA-DGR Class	1263	Paint	3	III		-

Transport in accordance with ADR/RID, IMDG/IMO and ICAO/IATA and national regulation.

15. Regulatory information

EU Regulations : The product is labelled as follows, in accordance with local regulations:

Indication of Danger :

Risk Phrases : R10- Flammable.
R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases : S23- Do not breathe vapor / spray.
S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

Additional Warning Phrases : Contains (decanedioic acid, bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester, decanedioic acid, methyl 1,2,2,6,6-pentamethyl-4-piperidinyl ester, poly(oxy-1,2-ethanediyl), .alpha.-[3-[3-(2h-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-.omega.-hydroxy-). May produce an allergic reaction.

National regulations

16. Other information

CEPE Classification : 1

Full text of R-Phrases with no. appearing in Section 2 - United Kingdom (UK) : R10- Flammable.
R22- Harmful if swallowed.
R65- Harmful: may cause lung damage if swallowed.
R37- Irritating to respiratory system.
R43- May cause sensitization by skin contact.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapours may cause drowsiness and dizziness.
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

HISTORY

Date of printing	:	**24.03.2003.**
Date of issue	:	**03.03.2003.**
Date of previous issue	:	**No Previous Validation.**
Version	:	**1**
Prepared by	:	

Notice to Reader

The information of this SDS is based on the present state of our knowledge and on current EU and national laws. The product is not to be used for other purposes than those specified under section 1 without first obtaining written handling instruction. It is always the responsibility of the user to take all necessary steps in order to fulfil the demand laid down in the local rules and legislation. The information in this SDS is meant as a description of the safety requirements of our product : it is not to be considered as a guarantee of the products properties.

Indicates information that has changed from previously issued version.

Changes have been made in international and national regulations that influences the following information in the Safety datasheets: Environmental labelling, sensitizers, carcinogenic effects and effects from solvents.

SAFETY DATA SHEET

Jotacote PSO - Comp. B

1. Identification of the substance/preparation and of the company/undertaking

Product Name and/or Code : **Jotacote PSO - Comp. B**

Label No. : 3358

Supplier/Manufacturer : Jotun Paints (Europe) Ltd.
Stather Road
Flixborough, Scunthorpe
North Lincolnshire
DN15 8RR
England

Tel: +44 17 24 40 00 00
Fax: +44 17 24 40 01 00

Emergency telephone number : Office phone/national poison centre. Office phone: +44 191 28 64 488

Product Use : Coatings: Hardener / Solvent-borne.

2. Composition/information on ingredients

Chemical name*	CAS no.	EC Number	%	Classification
Xylene	1330-20-7	215-535-7	10-25	R10 Xn; R20/21 Xi; R38
3-Aminopropyltriethoxysilane	919-30-2	213-048-4	10-25	Xn; R22 C; R34
Butan-1-ol	71-36-3	200-751-6	2.5-10	R10 Xn; R22 Xi; R37/38, 41 R67
Ethylbenzene	100-41-4	202-849-4	2.5-10	F; R11 Xn; R20
n-Butyl methacrylate	97-88-1	202-615-1	0-1	R10 Xi; R36/37/38 R43
2-Hydroxyethyl acrylate	818-61-1	212-454-9	0-1	T; R24 C; R34 R43 N; R50
See Section 16 for the full text of the R Phrases declared above.				

*** Occupational Exposure Limit(s), if available, are listed in Section 8.**

3. Hazards identification

The preparation is classified as dangerous according to Directive 1999/45/EC and its amendments.

Flammable.
Harmful by inhalation and in contact with skin.
Causes burns.

Corrosive

4. First-aid measures

First-Aid measures

General : In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Give nothing by mouth. If unconscious place in recovery position and seek medical advice.

Skin contact : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.

Eye Contact : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open.

Ingestion : If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do not induce vomiting.

5. Fire-fighting measures

Extinguishing Media : Recommended: alcohol resistant foam, CO2, powders, water spray.
Not to be used : waterjet.

Recommendations : Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not release runoff from fire to sewers or waterways.

6. Accidental release measures

Personal Precautions : Exclude sources of ignition and ventilate the area. Avoid breathing vapour or mist. Refer to protective measures listed in sections 7 and 8.

Spill : Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13). Do not allow to enter drains or watercourses. Clean preferably with a detergent; avoid use of solvents. If the product contaminates lakes, rivers or sewage, inform appropriate authorities in accordance with local regulations.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

7. Handling and storage

Handling : Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits.

In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard.

To dissipate static electricity during transfer, earth drum and connect to receiving container with bonding strap. Operators should wear anti-static footwear and clothing and floors should be of the conducting type.

Keep container tightly closed. Keep away from heat, sparks and flame. No sparking tools should be used.

Avoid contact with skin and eyes. Avoid the inhalation of dust, particulates and spray mist arising from the application of this preparation. Avoid inhalation of dust from sanding.

Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking.

Put on appropriate personal protective equipment (see Section 8).

Never use pressure to empty : container is not a pressure vessel. Always keep in containers of same material as the original one.

Comply with the health and safety at work laws.

When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all cases. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.

Storage : Store in accordance with local regulations. Observe label precautions. Store in a cool, well-ventilated area away from incompatible materials and ignition sources.

Keep away from: oxidizing agents, strong alkalis, strong acids.
No smoking. Prevent unauthorised access. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Do not empty into drains..

8. Exposure controls/personal protection

Engineering measures : Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Ingredient Name	Occupational Exposure Limits
Xylene	**EH40-OES (United Kingdom (UK), 2002). Skin Notes: OES** STEL: 441 mg/m³ 15 minute(s). STEL: 100 ppm 15 minute(s). TWA: 220 mg/m³ 8 hour(s). TWA: 50 ppm 8 hour(s).
3-Aminopropyltriethoxysilane	Not available.
Butan-1-ol	**EH40-OES (United Kingdom (UK), 2002). Skin Notes: OES** STEL: 154 mg/m³ 15 minute(s). STEL: 50 ppm 15 minute(s).
Ethylbenzene	**EH40-OES (United Kingdom (UK), 2002). Skin Notes: OES** STEL: 552 mg/m³ 15 minute(s). STEL: 125 ppm 15 minute(s). TWA: 441 mg/m³ 8 hour(s). TWA: 100 ppm 8 hour(s).
n-Butyl methacrylate	Not available.
2-Hydroxyethyl acrylate	Not available.

Personal protective equipment

Respiratory system : If workers are exposed to concentrations above the exposure limit they must use appropriate, certified respirators. Use respiratory mask with charcoal and dust filter when spraying this product (as filter combination A2-P2). In confined spaces use compressed air or fresh air respiratory equipment. When use of roller or brush, consider use of charcoalfilter (A2).

Skin and body : Personnel should wear anti-static clothing made of natural fibre or of high temperature resistant synthetic fibre.

Hands : For prolonged or repeated handling, use gloves: polyvinyl alcohol or nitrile.

Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.

Eyes : Use safety eyewear designed to protect against splash of liquids.

9. Physical and chemical properties

Physical state : Liquid.

Odour : Characteristic.

Colour : Various colours.

Flash point : Closed cup: 29°C (84.2°F).

pH : Not applicable.

Density : 1 g/cm^3

Vapour density : The highest known value is 3.7 (Air = 1) (Ethylbenzene). Weighted average: 3.48 (Air = 1)

Solubility : Insoluble in cold water.

10. Stability and reactivity

Stable under recommended storage and handling conditions (see section 7).

Hazardous Decomposition Products: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

Keep away from the following materials in order to avoid strong exothermic reactions: oxidizing agents, strong alkalis, strong acids.

11. Toxicological information

There are no data available on the preparation itself.

Exposure to component solvents vapours concentration in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on kidney, liver and central nervous system. Solvents may cause some of the above effects by absorption through the skin. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin. The liquid splashed in the eyes may cause irritation and reversible damage.

Contains (2-Hydroxyethyl acrylate, n-Butyl methacrylate). May produce an allergic reaction.

12. Ecological information

There are no data available on the preparation itself.
Do not allow to enter drains or watercourses.

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is not classified as dangerous for the environment, but contains substance(s) dangerous for the environment. See section 2 for details.

Ecotoxicity Data

Ingredient Name	Species	Period	Result
Xylene	Oncorhynchus mykiss (LC50)	96 hours	3.3 mg/l
	Oncorhynchus mykiss (LC50)	96 hours	8.2 mg/l
	Lepomis macrochirus (LC50)	96 hours	8.6 mg/l
	Lepomis macrochirus (LC50)	96 hours	12 mg/l
	Lepomis macrochirus (LC50)	96 hours	13.3 mg/l
	Pimephales promelas (LC50)	96 hours	13.4 mg/l
Butan-1-ol	Daphnia magna (EC50)	48 hours	1983 mg/l
	Lepomis macrochirus (LC50)	96 hours	100 mg/l
	Pimephales promelas (LC50)	96 hours	1730 mg/l
	Pimephales promelas (LC50)	96 hours	1910 mg/l
	Pimephales promelas (LC50)	96 hours	1940 mg/l
Ethylbenzene	Daphnia magna (EC50)	48 hours	2.93 mg/l
	Daphnia magna (EC50)	48 hours	2.97 mg/l
	Selenastrum capricornutum (EC50)	48 hours	7.2 mg/l
	Oncorhynchus mykiss (LC50)	96 hours	4.2 mg/l
	Pimephales promelas (LC50)	96 hours	9.09 mg/l
	Poecilia reticulata (LC50)	96 hours	9.6 mg/l
2-Hydroxyethyl acrylate	Pimephales promelas (LC50)	96 hours	4.8 mg/l

13. Disposal considerations

Do not allow to enter drains or watercourses. Material and/or container must be disposed of as hazardous waste.

European Waste Catalogue (EWC) : 08 00 00 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS

14. Transport information

International transport regulations

Regulatory Information	UN number	Proper shipping name	Class	Packing group	Label	Additional Information
ADR/RID Class	2734	Polyamines, liquid, corrosive, flammable, n.o.s. (3-Aminopropyltriethoxysilane)	8	II		**Hazard identification number** **83**
IMDG Class	2734	Polyamines, liquid, corrosive, flammable, n.o.s. (3-Aminopropyltriethoxysilane)	8	II		**Emergency Schedules (EmS)** **F-E, S-C** **Marine pollutant** **No.**
IATA-DGR Class	2734	Polyamines, liquid, corrosive, flammable, n.o.s. (3-Aminopropyltriethoxysilane)	8	II		-

Transport in accordance with ADR/RID, IMDG/IMO and ICAO/IATA and national regulation.

15. Regulatory information

EU Regulations : The product is labelled as follows, in accordance with local regulations:

Indication of Danger : Corrosive

Hazard symbol(s) :

Corrosive

Contains : 3-Aminopropyltriethoxysilane
Xylene

Risk Phrases : R10- Flammable.
R20/21- Harmful by inhalation and in contact with skin.
R34- Causes burns.

Safety Phrases : S16- Keep away from sources of ignition - No smoking.
S23- Do not breathe vapor / spray.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S51- Use only in well-ventilated areas.

Additional Warning Phrases : Contains (2-Hydroxyethyl acrylate, n-Butyl methacrylate). May produce an allergic reaction.

National regulations

16. Other information

CEPE Classification : 1

Full text of R-Phrases with no. appearing in Section 2 - United Kingdom (UK) :
R11- Highly flammable.
R10- Flammable.
R24- Toxic in contact with skin.
R20- Harmful by inhalation.
R20/21- Harmful by inhalation and in contact with skin.
R22- Harmful if swallowed.
R34- Causes burns.
R36/37/38- Irritating to eyes, respiratory system and skin.
R37/38- Irritating to respiratory system and skin.
R38- Irritating to skin.
R41- Risk of serious damage to eyes.
R43- May cause sensitization by skin contact.
R67- Vapours may cause drowsiness and dizziness.
R50- Very toxic to aquatic organisms.

HISTORY

Date of issue : **03.03.2003.**

Date of printing	:	**24.03.2003.**
Date of issue	:	**03.03.2003.**
Date of previous issue	:	**No Previous Validation.**
Version	:	**1**
Prepared by	:	

Notice to Reader

The information of this SDS is based on the present state of our knowledge and on current EU and national laws. The product is not to be used for other purposes than those specified under section 1 without first obtaining written handling instruction. It is always the responsibility of the user to take all necessary steps in order to fulfil the demand laid down in the local rules and legislation. The information in this SDS is meant as a description of the safety requirements of our product : it is not to be considered as a guarantee of the products properties.

Indicates information that has changed from previously issued version.

Changes have been made in international and national regulations that influences the following information in the Safety datasheets: Environmental labelling, sensitizers, carcinogenic effects and effects from solvents.

MATERIAL SAFETY DATA SHEET
KEELER & LONG/PPG INDUSTRIES, INC.

SECTION 1 - CHEMICAL, PRODUCT, AND COMPANY INFORMATION

PRODUCT CODE/IDENTITY: UMS1000030

PRODUCT TRADE NAME: *MEGAFLON MS CLEARCOAT 30

REVISION DATE: 04/19/02 (000) 0874

CUSTOMER PART #/NAME: Not applicable

CHEMICAL FAMILY: Fluoropolymer

EMERGENCY MEDICAL/SPILL INFO: (304) 843-1300 (U.S.) 91-800-00-214 (MEXICO)

TECHNICAL INFORMATION: 1-800-238-8596

PRODUCT SAFETY/MSDS INFORMATION: 4325 ROSANNA DRIVE, P.O. BOX 9 ALLISON PARK, PA 15101 (412) 492-5555

DATE OF MSDS PREPARATION: 05/22/02

PRIMARY HAZARD WARNING

Flammable. Keep away from heat, sparks, flames, and other sources of ignition. Do not smoke. Extinguish all flames and pilot lights. Turn off stoves, heaters, electrical motors, and other sources of ignition during use and until all vapors/odors are gone. Harmful if swallowed. May be corrosive. This product contains a material which causes skin burns. This product contains a material which causes irreversible eye damage. Vapor and/or spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat.

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS.

TRANSPORTATION OF DANGEROUS GOODS

PROPER SHIPPING NAME: Paint

NOS TECHNICAL NAME: None

HAZARD CLASS: 3

SUBSIDIARY CLASS: None

UN NUMBER: UN1263

PACKING GROUP: III

MARINE POLLUTANT: None

USA-RQ, HAZARDOUS SUBSTANCE: Xylenes

USA-RQ, HAZARDOUS SUBSTANCE THRESHOLD SHIP WEIGHT: Xylenes>413.18 Pounds

CANADA SCHEDULE XIII, 9.2:

CANADA SCHEDULE XIII,9.2 THRESHOLD SHIP WEIGHT:

USA Shipments Only - RQ Threshold Ship Weight: This is the total weight of this

product that must be shipped to exceed the RQ quantity.
Canada Shipments Only - Canada Schedule XIII Threshold Ship Weight: This is the total weight of this product that must be shipped to exceed the Canadian Schedule XIII Regulated Limit quantity.

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

REF	HAZARDOUS INGREDIENTS	PERCENT	CAS NUMBER	CARCINOGEN*
01	1-METHOXY-2-PROPYL ACETATE	10- <20	108-65-6	
02	XYLENES	20- <30	1330-20-7	
03	AROMATIC NAPHTHA	10- <20	64742-95-6	
04	SILICA	1 - <5	7631-86-9	
05	DODECYLPYRROLIDINEDIONE	1 - <5	79720-19-7	
06	1,2,4-TRIMETHYL BENZENE	5 - <10	95-63-6	

* Carcinogens: O=OSHA; A=ACGIH; N=NTP; I=IARC

SARA TITLE III & CERCLA CLASSIFICATIONS

REF	SARA 102 RQ (LBS)	SARA 302 TPQ (LBS)	SARA 313	SARA 311/312 AC	CH	FL	PR	RE
01	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
01	NOT ESTAB	NOT ESTAB	N					
02	100 lbs	NOT ESTAB	Y	Y	N	Y	N	N
03	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
03	NOT ESTAB	NOT ESTAB	N					
04	NOT ESTAB	NOT ESTAB	N	N	N	N	N	N
05	NOT ESTAB	NOT ESTAB	N	Y	N	N	N	N
06	NOT ESTAB	NOT ESTAB	Y	Y	N	Y	N	N

SARA 311/312 CATEGORIES FOR THIS PRODUCT: ACUTE= Y, CHRONIC= N, FLAMMABILITY= Y, PRESSURE= N, REACTIVITY= N

OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS:

REF	ACGIH TLV-TWA	ACGIH TLV-STEL	U.S. OSHA PEL-TWA	U.S. OSHA PEL-STEL
01	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB
01	IPEL-TWA: 100 ppm		IPEL-STEL: NOT ESTAB	
01	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB
02	100 ppm	150 ppm	100 ppm	150 ppm
03	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB
03	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB
04	10 mg/m3	NOT ESTAB	6 mg/m3	NOT ESTAB
05	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB
06	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB

[C- Ceiling Limit; S- Potential Skin Absorption; R- Respirable Dust]

REF	ACGIH TLV - BASIS - CRITICAL EFFECT(S)
01	NOT ESTAB.
01	NOT ESTAB.
02	irritation
03	NOT ESTAB.
03	NOT ESTAB.
04	NOT ESTAB.
05	NOT ESTAB.
06	NOT ESTAB.

[ACGIH TLV BASIS - CRITICAL EFFECT(S): CNS-CENTRAL NERVOUS SYSTEM; CVS-CARDIOVASCULAR SYSTEM; CWP-COAL WORKER'S PNEUMOCONIOSIS; GI-GASTROINTESTINAL] [NOT ESTAB.= NOT ESTABLISHED = NOT APPLICABLE] [NOT ESTAB.

= NOT ESTABLISHED = NOT APPLICABLE]
PRODUCT STATUS RELATIVE TO THE U.S. EPA TOXIC SUBSTANCES CONTROL ACT

All chemical substances in this product are listed on the U.S. TSCA Inventory or are otherwise exempt from TSCA Inventory reporting requirements.

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF OVEREXPOSURE FROM:

INGESTION: Harmful if swallowed.

EYE CONTACT: This product contains a material which causes irreversible eye damage.

SKIN CONTACT: May be corrosive. This product contains a material which causes skin burns.

INHALATION: Vapor and/or spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage.

CHRONIC OVEREXPOSURE: Avoid long-term and repeated contact. High exposures to xylenes in some animal studies have been reported to cause health effects on the developing embryo and fetus. These effects were often at levels toxic to the mother. The significance of these findings to humans has not been determined.

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Eye watering, headaches, nausea, dizziness, and loss of coordination are indications that solvent levels are too high. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. Redness, itching, burning sensation and visual disturbances may indicate excessive eye contact. Dryness, itching, cracking, burning, redness, and swelling are conditions associated with excessive skin contact.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Not applicable.

SECTION 4 - FIRST AID MEASURES

IMPORTANT FIRST AID INFORMATION: If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Material Safety Data Sheet information available.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Do Not induce vomiting. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

EYE CONTACT: Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

SKIN CONTACT: Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

INHALATION: Remove from area to fresh air. If symptomatic, contact a poison control center, emergency room or physician for treatment information.

SECTION 5 - FIRE FIGHTING MEASURES

FLASHPOINT: 78 Degrees F (25 Degrees C) (PENSKY-MARTENS CLOSED CUP)

FLAMMABLE LIMITS: Lower explosion limit (LEL): 1.1

Upper explosion limit (UEL): Not available

EXTINGUISHING MEDIA: Use National Fire Protection Association (NFPA) Class B extinguishers (carbon dioxide, dry chemical, or universal aqueous film forming foam) designed to extinguish NFPA Class IC flammable liquid fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep this product away from heat, sparks, flame, and other sources of ignition (i.e., pilot lights, electric motors, static electricity). Invisible vapors can travel to a source of ignition and flash back. Do not smoke while using this product. Keep containers tightly closed when not in use. Closed containers may explode when overheated. Do not apply to hot surfaces. Toxic gases may form when this product comes in contact with extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES: Water spray may be ineffective. Water spray may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable. Fire-fighters should wear self-contained breathing apparatus and full protective clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Provide maximum ventilation. Only personnel equipped with proper respiratory, skin, and eye protection should be permitted in the area. Remove all sources of ignition. Take up spilled material with sand, vermiculite, or other noncombustible absorbent material and place in clean, empty containers for disposal. Only the spilled material and the absorbant should be placed in this container.

WASTE DISPOSAL METHOD: Waste material must be disposed of in accordance with federal, state, provincial, and local environmental control regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

SECTION 7 - HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS: Do not store above 120 degrees F.(48 degrees C.). Store large quantities in buildings designed and protected for storage of NFPA Class IC flammable liquids.

OTHER PRECAUTIONS: Vapors may collect in low areas. If this material is part of a multiple component system, read the Material Safety Data Sheet(s) for the other component or components before blending as the resulting mixture may have the hazards of all of its parts. Containers should be grounded when pouring. Avoid free fall of liquids in excess of a few inches.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION: Wear chemical-type splash goggles or full face shield when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapors.

SKIN PROTECTION: Wear protective clothing sufficient to cover exposed skin surfaces. For applications where skin contact is likely and impermeable clothing is necessary, select clothing constructed of: neoprene rubber or nitrile rubber. No specific permeation/degradation testing have been done on protective clothing for this product. Recommendations for skin protection are based on infrequent contact with this product. For frequent contact or total immersion, contact a manufacturer of protective clothing for appropriate chemical impervious equipment.

RESPIRATORY PROTECTION: Overexposure to vapors may be prevented by ensuring proper ventilation controls, vapor exhaust or fresh air entry. A NIOSH- approved air purifying respirator with the appropriate chemical cartridges or a positive-pressure, air-supplied respirator may also reduce exposure. Read the respirator manufacturer's instructions and literature carefully to determine the type of airborne contaminants against which the respirator is effective, its limitations, and how it is to be properly fitted and used.

OTHER EQUIPMENT: Clean contaminated clothing and shoes.

VENTILATION REQUIREMENTS: Provide general dilution or local exhaust ventilation in volume and pattern to keep the concentration of ingredients listed in Section 2 below the lowest suggested exposure limits, the LEL below the stated limit, and to remove decomposition products during welding or flame cutting.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

[FORMULA VALUES, NOT SALES SPECIFICATIONS]

BOILING RANGE: 239- 379Degrees F

SOLUBILITY IN WATER: 3.6 %

VAPOR PRESSURE: 4.1 mmHg

WEIGHT/GALLON (LBS): 8.78 (U.S.)

VAPOR DENSITY: Heavier than air

pH: Not determined

% VOLATILE/VOLUME: 68.620

% SOLIDS BY WEIGHT: 41.71

SPECIFIC GRAVITY: 1.054

EVAPORATION RATE(BuOAc=100): 44

ODOR/APPEARANCE: Viscous liquid with an odor characteristic of the solvents listed in Section 2.

SECTION 10 - STABILITY AND REACTIVITY

This product is normally stable and will not undergo hazardous reactions.

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID): Avoid contact with strong alkalies, strong mineral acids, or strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: May produce the following hazardous decomposition products when exposed to extreme heat: carbon monoxide ; carbon dioxide ; lower molecular weight polymer fractions; Extreme heat includes, but is not limited to, flame cutting, brazing, and welding.

Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) Ratings:

HMIS Rating		NFPA Rating	
HEALTH	3	HEALTH	3
FLAMMABILITY	3	FLAMMABILITY	3
REACTIVITY	0	INSTABILITY	0

Rating System:0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe, *=Chronic Effects.

Safe handling of this product requires that all of the information on the MSDS be evaluated for specific work environments and conditions of use.

THIS IS THE END OF THE MSDS FOR: UMS1000030 (00233291.001UMS1000030)

Manufactured and Supplied by:

KEELER & LONG/PPG INDUSTRIES, INC.

856 ECHO LAKE ROAD

WATERTOWN, CT 06795

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MATERIAL SAFETY DATA SHEET
KEELER & LONG/PPG INDUSTRIES, INC.

SECTION 1 - CHEMICAL, PRODUCT, AND COMPANY INFORMATION

PRODUCT CODE/IDENTITY: UMS2001030

PRODUCT TRADE NAME: *MEGAFLON MS K&L OFF-WHITE

REVISION DATE: 06/29/01 (000) 0874

CUSTOMER PART #/NAME: Not applicable

CHEMICAL FAMILY: Fluoropolymer

EMERGENCY MEDICAL/SPILL INFO: (304) 843-1300 (U.S.) 01-800-00-21-400 (MEXICO)

TECHNICAL INFORMATION: 1-800-238-8596

PRODUCT SAFETY/MSDS INFORMATION: 4325 ROSANNA DRIVE, P.O. BOX 9

DATE OF MSDS PREPARATION: 12/05/02

PRIMARY HAZARD WARNING

Flammable. Keep away from heat, sparks, flames, and other sources of ignition. Do not smoke. Extinguish all flames and pilot lights. Turn off stoves, heaters, electrical motors, and other sources of ignition during use and until all vapors/odors are gone. Harmful if swallowed. May cause moderate skin irritation. Causes eye irritation. Vapor and/or spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat.

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS.

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

REF	HAZARDOUS INGREDIENTS	PERCENT	CAS NUMBER	CARCINOGEN*
01	ETHYL BENZENE	0.1- <1	100-41-4	I
02	1-METHOXY-2-PROPYL ACETATE	10- <20	108-65-6	
03	XYLENES	10- <20	1330-20-7	
04	TITANIUM DIOXIDE	20- <30	13463-67-7	
05	AROMATIC NAPHTHA	5 - <10	64742-95-6	
06	SILICA	1 - <5	7631-86-9	
07	1,2,4-TRIMETHYL BENZENE	1 - <5	95-63-6	

* Carcinogens: O=OSHA; A=ACGIH; N=NTP; I=IARC

SARA TITLE III & CERCLA CLASSIFICATIONS

REF	CERCLA HAZARDOUS SUBSTANCE RQ(LBS)	SARA EXTREMELY HAZ SUBSTANCE TPQ(LBS)	SARA 313	SARA 311/312 AC	CH	FL	PR	RE
01	1000 lbs	NOT ESTAB	Y	Y	Y	Y	N	N
02	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
02	NOT ESTAB	NOT ESTAB	N	(ONTARIO)				
03	100 lbs	NOT ESTAB	Y	Y	N	Y	N	N
04	NOT ESTAB	NOT ESTAB	N	N	N	N	N	N
04	NOT ESTAB	NOT ESTAB	N	(TI COMPDS)				
04	NOT ESTAB	NOT ESTAB	N	(AS TI)				
05	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
05	NOT ESTAB	NOT ESTAB	N	(ONTARIO)				
06	NOT ESTAB	NOT ESTAB	N	N	N	N	N	N

07 NOT ESTAB NOT ESTAB Y Y N Y N N

SARA 311/312 CATEGORIES FOR THIS PRODUCT: ACUTE= Y, CHRONIC= Y, FLAMMABILITY= Y, PRESSURE= N, REACTIVITY= N

OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS:

	ACGIH		U.S. OSHA		
REF	TLV-TWA	TLV-STEL	PEL-TWA	PEL-STEL	
01	100 ppm	125 ppm	100 ppm	125 ppm	
02	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	
02	IPEL-TWA: 100 ppm		IPEL-STEL: NOT ESTAB		
02	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	(ONTARIO)
03	100 ppm	150 ppm	100 ppm	150 ppm	
04	10 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB	
04	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	(TI COMPDS)
04	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	(AS TI)
05	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	
05	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	(ONTARIO)
06	10 mg/m3	NOT ESTAB	6 mg/m3	NOT ESTAB	
07	NOT ESTAB	NOT ESTAB	NOT ESTAB	NOT ESTAB	

[C- Ceiling Limit; S- Potential Skin Absorption; R- Respirable Dust]

REF	ACGIH TLV - BASIS - CRITICAL EFFECT(S)
01	irritation; CNS
02	NOT ESTAB.
02	(ONTARIO) ...NOT ESTAB.
03	irritation
04	lung
04	(TI COMPDS) ...NOT ESTAB.
04	(AS TI) ...NOT ESTAB.
05	NOT ESTAB.
05	(ONTARIO) ...NOT ESTAB.
06	NOT ESTAB.
07	NOT ESTAB.

[ACGIH TLV BASIS - CRITICAL EFFECT(S): CNS-CENTRAL NERVOUS SYSTEM; CVS-CARDIOVASCULAR SYSTEM; CWP-COAL WORKER'S PNEUMOCONIOSIS; GI-GASTROINTESTINAL] [NOT ESTAB.= NOT ESTABLISHED = NOT APPLICABLE] [NOT ESTAB. = NOT ESTABLISHED = NOT APPLICABLE]

PRODUCT STATUS RELATIVE TO THE U.S. EPA TOXIC SUBSTANCES CONTROL ACT

All chemical substances in this product are listed on the U.S. TSCA Inventory or are otherwise exempt from TSCA Inventory reporting requirements.

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF OVEREXPOSURE FROM:

INGESTION: Harmful if swallowed.

EYE CONTACT: Causes eye irritation.

SKIN CONTACT: May cause moderate skin irritation.

INHALATION: Vapor and/or spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage.

CHRONIC OVEREXPOSURE: Avoid long-term and repeated contact. This product

contains titanium dioxide. Animals inhaling massive quantities of titanium dioxide dust in a long-term study developed lung tumors. Studies with humans involved in manufacture of this pigment indicate no increased risk of cancer from exposure. Potential for inhalation of titanium dioxide dusts from coatings is very limited. Since overexposures are not expected, there is no significant hazard for man. Ethylbenzene has been reported by NTP to cause cancer in laboratory animals following a chronic (2 year) inhalation exposure. Carcinogenicity was found in the kidneys of rats and the lung and liver of mice at the 750 ppm dose level. The No Observed Effect Level (NOEL) was 75 ppm. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and classified it as a possible human carcinogen (Group 2B) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. High exposures to xylenes in some animal studies have been reported to cause health effects on the developing embryo and fetus. These effects were often at levels toxic to the mother. The significance of these findings to humans has not been determined.

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Eye watering, headaches, nausea, dizziness, and loss of coordination are indications that solvent levels are too high. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. Redness, itching, burning sensation and visual disturbances may indicate excessive eye contact. Dryness, itching, cracking, burning, redness, and swelling are conditions associated with excessive skin contact.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Not applicable.

SECTION 4 - FIRST AID MEASURES

IMPORTANT FIRST AID INFORMATION: If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Material Safety Data Sheet information available.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given. Never give anything by mouth to an unconscious person. Contact a poison control center, emergency room or physician right away as further treatment may be necessary.

EYE CONTACT: Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. If irritation persists, contact a poison control center, emergency room, or physician as further treatment may be necessary.

SKIN CONTACT: Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. If any symptoms persist, contact a poison control center, emergency room, or physician as further treatment may be necessary.

INHALATION: Remove from area to fresh air. If symptomatic, contact a poison control center, emergency room or physician for treatment information.

SECTION 5 - FIRE FIGHTING MEASURES

FLASHPOINT: 78 Degrees F (25 Degrees C) (PENSKY-MARTENS CLOSED CUP)

FLAMMABLE LIMITS: Lower explosion limit (LEL): 1.1

Upper explosion limit (UEL): Not available

EXTINGUISHING MEDIA: Use National Fire Protection Association (NFPA) Class B extinguishers (carbon dioxide, dry chemical, or universal aqueous film forming foam) designed to extinguish NFPA Class IC flammable liquid fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep this product away from heat, sparks, flame, and other sources of ignition (i.e., pilot lights, electric motors,

static electricity). Invisible vapors can travel to a source of ignition and flash back. Do not smoke while using this product. Keep containers tightly closed when not in use. Closed containers may explode when overheated. Do not apply to hot surfaces. Toxic gases may form when this product comes in contact with extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES: Water spray may be ineffective. Water spray may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable. Fire-fighters should wear self-contained breathing apparatus and full protective clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Provide maximum ventilation. Only personnel equipped with proper respiratory, skin, and eye protection should be permitted in the area. Remove all sources of ignition. Take up spilled material with sand, vermiculite, or other noncombustible absorbent material and place in clean, empty containers for disposal. Only the spilled material and the absorbant should be placed in this container.

WASTE DISPOSAL METHOD: Waste material must be disposed of in accordance with federal, state, provincial, and local environmental control regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

SECTION 7 - HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS: Do not store above 120 degrees F.(48 degrees C.). Store large quantities in buildings designed and protected for storage of NFPA Class IC flammable liquids.

OTHER PRECAUTIONS: Vapors may collect in low areas. If this material is part of a multiple component system, read the Material Safety Data Sheet(s) for the other component or components before blending as the resulting mixture may have the hazards of all of its parts. Containers should be grounded when pouring. Avoid free fall of liquids in excess of a few inches.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION: Wear chemical-type splash goggles when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapors.

SKIN PROTECTION: Wear protective clothing to prevent skin contact. Apron and gloves should be constructed of: neoprene rubber or nitrile rubber. No specific permeation/degradation testing have been done on protective clothing for this product. Recommendations for skin protection are based on infrequent contact with this product. For frequent contact or total immersion, contact a manufacturer of protective clothing for appropriate chemical impervious equipment.

RESPIRATORY PROTECTION: Overexposure to vapors may be prevented by ensuring proper ventilation controls, vapor exhaust or fresh air entry. A NIOSH- approved air purifying respirator with the appropriate chemical cartridges or a positive-pressure, air-supplied respirator may also reduce exposure. Read the respirator manufacturer's instructions and literature carefully to determine the type of airborne contaminants against which the respirator is effective, its limitations, and how it is to be properly fitted and used.

OTHER EQUIPMENT: Clean contaminated clothing and shoes.

VENTILATION REQUIREMENTS: Provide general dilution or local exhaust ventilation in volume and pattern to keep the concentration of ingredients listed in Section

2 below the lowest suggested exposure limits, the LEL below the stated limit, and to remove decomposition products during welding or flame cutting.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

[FORMULA VALUES, NOT SALES SPECIFICATIONS]

BOILING RANGE: 239- 379Degrees F

SOLUBILITY IN WATER: 2.3 %

VAPOR PRESSURE: 4.2 mmHg

WEIGHT/GALLON (LBS): 10.91 (U.S.)

VAPOR DENSITY: Heavier than air

pH: Not determined

% VOLATILE/VOLUME: 59.420

% SOLIDS BY WEIGHT: 59.49

SPECIFIC GRAVITY: 1.309

EVAPORATION RATE(BuOAc=100): 48

ODOR/APPEARANCE: Viscous liquid with an odor characteristic of the solvents listed in Section 2.

SECTION 10 - STABILITY AND REACTIVITY

This product is normally stable and will not undergo hazardous reactions.

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID): Avoid contact with strong alkalies, strong mineral acids, or strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: May produce the following hazardous decomposition products when exposed to extreme heat: carbon monoxide ; carbon dioxide ; lower molecular weight polymer fractions; Extreme heat includes, but is not limited to, flame cutting, brazing, and welding.

Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) Ratings:

HMIS Rating		NFPA Rating	
HEALTH	2*	HEALTH	2
FLAMMABILITY	3	FLAMMABILITY	3
REACTIVITY	0	INSTABILITY	0

Rating System:0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe, *=Chronic Effects.

Safe handling of this product requires that all of the information on the MSDS be evaluated for specific work environments and conditions of use.

TRANSPORTATION OF DANGEROUS GOODS

PROPER SHIPPING NAME: Paint

NOS TECHNICAL NAME: None

HAZARD CLASS: 3

SUBSIDIARY CLASS: None

UN NUMBER: UN1263

PACKING GROUP: III

MARINE POLLUTANT: None

USA-RQ, HAZARDOUS SUBSTANCE: Xylenes

USA-RQ, HAZARDOUS SUBSTANCE THRESHOLD SHIP WEIGHT: Xylenes>516.74 Pounds

USA Shipments Only - RQ Threshold Ship Weight: This is the total weight of this product that must be shipped to exceed the RQ quantity.

THIS IS THE END OF THE MSDS FOR: UMS2001030 (00222897.002UMS2001030)

Manufactured and Supplied by:

PPG INDUSTRIES, INC.

856 ECHO LAKE ROAD

WATERTOWN, CT 06795

tY

MATERIAL SAFETY DATA SHEET
KEELER & LONG/PPG INDUSTRIES, INC.

SECTION 1 - CHEMICAL, PRODUCT, AND COMPANY INFORMATION

PRODUCT CODE/IDENTITY: KLMS21B

PRODUCT TRADE NAME: MEGAFLON SPRAY PART B

REVISION DATE: 01/05/01 (000) 0874

CUSTOMER PART #/NAME: Not applicable

CHEMICAL FAMILY: ISOCYANATE

EMERGENCY MEDICAL/SPILL INFO: (304) 843-1300 (U.S.) 91-800-00-214 (MEXICO)

TECHNICAL INFORMATION: 1-800-238-8596

PRODUCT SAFETY/MSDS INFORMATION: 4325 ROSANNA DRIVE, P.O. BOX 9 ALLISON PARK, PA 15101 (412) 492-5555

DATE OF MSDS PREPARATION: 10/17/02

PRIMARY HAZARD WARNING

Combustible. Keep away from heat, sparks, flames, and other sources of ignition. Do not smoke. Harmful if swallowed. May cause moderate skin irritation. Causes severe eye irritation. May be absorbed through the skin. Prolonged or repeated contact may cause an allergic skin reaction. Vapor and/or spray mist may be harmful if inhaled. May cause irritation and/or allergic respiratory reaction in lungs. Vapor irritates eyes, nose, and throat.

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS.

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

REF	HAZARDOUS INGREDIENTS	PERCENT	CAS NUMBER	CARCINOGEN*
01	N-BUTYL ACETATE	5 - <10	123-86-4	
02	HEXANE-1,6-DI-ISOCYANATE POLYMER	90- 100	28182-81-2	
03	AROMATIC NAPHTHA	1 - <5	64742-95-6	

* Carcinogens: O=OSHA; A=ACGIH; N=NTP; I=IARC

SARA TITLE III & CERCLA CLASSIFICATIONS

REF	CERCLA HAZARDOUS SUBSTANCE RQ(LBS)	SARA EXTREMELY HAZ SUBSTANCE TPQ(LBS)	SARA 313	SARA 311/312 AC	CH	FL	PR	RE
01	5000 lbs	NOT ESTAB	N	Y	N	Y	N	N
02	NOT ESTAB	NOT ESTAB	N	Y	Y	N	N	N
03	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
03	NOT ESTAB	NOT ESTAB	N			(ONTARIO)		

SARA 311/312 CATEGORIES FOR THIS PRODUCT: ACUTE= Y, CHRONIC= Y, FLAMMABILITY= Y, PRESSURE= N, REACTIVITY= N

OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS:

REF	ACGIH TLV-TWA	ACGIH TLV-STEL	U.S. OSHA PEL-TWA	U.S. OSHA PEL-STEL
01	150 PPM	200 ppm	150 ppm	200 ppm

02 NOT ESTAB NOT ESTAB NOT ESTAB NOT ESTAB
02 IPEL-TWA: 0.5 mg/m3 IPEL-STEL: 1 mg/m3
03 NOT ESTAB NOT ESTAB NOT ESTAB NOT ESTAB
03 NOT ESTAB NOT ESTAB NOT ESTAB NOT ESTAB (ONTARIO)

[C- Ceiling Limit; S- Potential Skin Absorption; R- Respirable Dust]

REF ACGIH TLV - BASIS - CRITICAL EFFECT(S)

---- ----------
01 irritation
02 NOT ESTAB.
03 NOT ESTAB.
03 (ONTARIO) ...NOT ESTAB.

[ACGIH TLV BASIS - CRITICAL EFFECT(S): CNS-CENTRAL NERVOUS SYSTEM; CVS-CARDIOVASCULAR SYSTEM; CWP-COAL WORKER'S PNEUMOCONIOSIS; GI-GASTROINTESTINAL] [NOT ESTAB.= NOT ESTABLISHED = NOT APPLICABLE] [NOT ESTAB. = NOT ESTABLISHED = NOT APPLICABLE]

PRODUCT STATUS RELATIVE TO THE U.S. EPA TOXIC SUBSTANCES CONTROL ACT

All chemical substances in this product are listed on the U.S. TSCA Inventory or are otherwise exempt from TSCA Inventory reporting requirements.

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF OVEREXPOSURE FROM:

INGESTION: Harmful if swallowed.

EYE CONTACT: Causes severe eye irritation.

SKIN CONTACT: May cause moderate skin irritation. May be absorbed through the skin. Prolonged or repeated contact may cause an allergic skin reaction.

INHALATION: Vapor and/or spray mist may be harmful if inhaled. May cause irritation and/or allergic respiratory reaction in lungs. Vapor irritates eyes, nose, and throat. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage. Do not use if you have chronic (long-term) lung or breathing problems, or if you have ever had a reaction to isocyanates.

CHRONIC OVEREXPOSURE: Avoid long-term and repeated contact. This product contains isocyanates. Inhalation may cause a burning sensation in the nose, throat and lungs. Prolonged inhalation may cause lung damage and/or allergic respiratory reaction. Allergic respiratory reactions to isocyanates are characterized by asthma-like symptoms such as chest tightness, wheezing, shortness of breath and coughing. These symptoms may follow repeated exposure or a single massive exposure and may be delayed. Chronic overexposure to isocyanates has been reported to cause lung damage, including a decrease in lung function, which may be permanent.

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Eye watering, headaches, nausea, dizziness, and loss of coordination are indications that solvent levels are too high. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal. Redness, itching, burning sensation and visual disturbances may indicate excessive eye contact. Dryness, itching, cracking, burning, redness, and swelling are conditions associated with excessive skin contact.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Do not use if you have chronic (long-term) lung or breathing problems, or if you have ever had a reaction to isocyanates.

SECTION 4 - FIRST AID MEASURES

IMPORTANT FIRST AID INFORMATION: If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Material Safety Data Sheet information available.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given. Never give anything by mouth to an unconscious person. Contact a poison control center, emergency room or physician right away as further treatment may be necessary.

EYE CONTACT: Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. If irritation persists, contact a poison control center, emergency room, or physician as further treatment may be necessary.

SKIN CONTACT: Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. If any symptoms persist, contact a poison control center, emergency room, or physician as further treatment may be necessary.

INHALATION: Remove from area to fresh air. If symptomatic, contact a poison control center, emergency room or physician for treatment information.

SECTION 5 - FIRE FIGHTING MEASURES

FLASHPOINT: 117 Degrees F (47 Degrees C) (PENSKY-MARTENS CLOSED CUP)

FLAMMABLE LIMITS: Lower explosion limit (LEL): 1.4

Upper explosion limit (UEL): Not available

EXTINGUISHING MEDIA: Use National Fire Protection Association (NFPA) Class B extinguishers (carbon dioxide, dry chemical, or universal aqueous film forming foam) designed to extinguish NFPA Class II combustible liquid fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Keep this product away from heat, sparks, flame, and other sources of ignition (i.e., pilot lights, electric motors, static electricity). Invisible vapors can travel to a source of ignition and flash back. Do not smoke while using this product. Keep containers tightly closed when not in use. Closed containers may explode when overheated. Do not apply to hot surfaces. Toxic gases may form when this product comes in contact with extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES: Water spray may be ineffective. Water spray may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable. Fire-fighters should wear self-contained breathing apparatus and full protective clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Provide maximum ventilation. Only personnel equipped with proper respiratory, skin, and eye protection should be permitted in the area. Remove all sources of ignition. Take up spilled material with sand, vermiculite, or other noncombustible absorbent material and place in clean, empty containers for disposal. Only the spilled material and the absorbant should be placed in this container.

WASTE DISPOSAL METHOD: Waste material must be disposed of in accordance with federal, state, provincial, and local environmental control regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

SECTION 7 - HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS: Do not store above 120 degrees F.(48 degrees C.). Store large quantities in buildings designed and protected for storage of NFPA Class II combustible liquids.

OTHER PRECAUTIONS: Vapors may collect in low areas. If this material is part of a multiple component system, read the Material Safety Data Sheet(s) for the other component or components before blending as the resulting mixture may have the hazards of all of its parts. Containers should be grounded when pouring. Avoid free fall of liquids in excess of a few inches.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION: Wear chemical-type splash goggles or full face shield when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapors.

SKIN PROTECTION: Wear protective clothing sufficient to cover exposed skin surfaces. For applications where skin contact is likely and impermeable clothing is necessary, select clothing constructed of: impermeable material. No specific permeation/degradation testing have been done on protective clothing for this product. Recommendations for skin protection are based on infrequent contact with this product. For frequent contact or total immersion, contact a manufacturer of protective clothing for appropriate chemical impervious equipment.

RESPIRATORY PROTECTION: Where vapors or overspray are present, use a NIOSH approved, positive-pressure, air- supplied respirator for the entire time of spraying and until all vapors and mists are gone. Follow the respirator manufacturer's directions for respirator use.

OTHER EQUIPMENT: The decision whether to clean or discard contaminated clothing should be based on the chemicals contaminating them. Some chemicals can cause skin irritation, sensitization or other health effects if the cleaning process does not remove all traces of them. Consult a safety professional to determine whether clothing contaminated with this product can be safely cleaned and reused.

VENTILATION REQUIREMENTS: Provide general dilution or local exhaust ventilation in volume and pattern to keep the concentration of ingredients listed in Section 2 below the lowest suggested exposure limits, the LEL below the stated limit, and to remove decomposition products during welding or flame cutting.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

[FORMULA VALUES, NOT SALES SPECIFICATIONS]

BOILING RANGE: 255- 351Degrees F

SOLUBILITY IN WATER: .0 %

VAPOR PRESSURE: 5.5 mmHg

WEIGHT/GALLON (LBS): 9.45 (U.S.)

VAPOR DENSITY: Heavier than air

pH: Not determined

% VOLATILE/VOLUME: 12.930

% SOLIDS BY WEIGHT: 90.00

SPECIFIC GRAVITY: 1.134
EVAPORATION RATE(BuOAc=100): 63

ODOR/APPEARANCE: Viscous liquid with an odor characteristic of the solvents listed in Section 2.

SECTION 10 - STABILITY AND REACTIVITY

This product is normally stable but may undergo hazardous reactions at extremely high temperatures and pressures.

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID): Avoid contact with strong alkalies, strong mineral acids, or strong oxidizing agents. Avoid water and alcohols.

HAZARDOUS DECOMPOSITION PRODUCTS: May produce the following hazardous decomposition products when exposed to extreme heat: carbon monoxide ; carbon dioxide ; hydrogen cyanide ; lower molecular weight polymer fractions; traces of isocyanate ; oxides of nitrogen ; Extreme heat includes, but is not limited to, flame cutting, brazing, and welding.

Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) Ratings:

HMIS Rating		NFPA Rating	
HEALTH	3*	HEALTH	3
FLAMMABILITY	2	FLAMMABILITY	2
REACTIVITY	1	INSTABILITY	1

Rating System:0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe, *=Chronic Effects.

Safe handling of this product requires that all of the information on the MSDS be evaluated for specific work environments and conditions of use.

TRANSPORTATION OF DANGEROUS GOODS

PROPER SHIPPING NAME: Paint

NOS TECHNICAL NAME: None

HAZARD CLASS: 3

SUBSIDIARY CLASS: None

UN NUMBER: UN1263

PACKING GROUP: III

MARINE POLLUTANT: None

USA-RQ, HAZARDOUS SUBSTANCE: None

USA-RQ, HAZARDOUS SUBSTANCE THRESHOLD SHIP WEIGHT: None

USA and Canada Shipments Only- Combustible Liquid Exception: Non-bulk (<=119 Gallons/450 L) ground shipments can be reclassified to "not regulated" for transportation. Bulk shipments - USA Only (> 119 Gallons/450 L) can be reclassified to a Combustible Liquid.

THIS IS THE END OF THE MSDS FOR: KLMS21B (00195530.008KLN1000)

Manufactured and Supplied by:

KEELER & LONG/PPG INDUSTRIES, INC.
856 ECHO LAKE ROAD

WATERTOWN, CT 06795

,Y

Revodyne Industrial Coatings
3700 Campus Drive, Suite 105
Newport Beach, CA 92660

January 12, 2004

ITB Southern Regional Office
Attention: Pattie L. Lewis, Nasa AP2 Office
2460 N. Courtenay Parkway, Suite 101
Merritt Island, FL 32953

Re: Revodyne Industrial Coating

Dear Ms. Lewis:

As you requested, we hereby supply you with the Safety Data Sheets.

Our formulation for the coating is a complex polymer polyester resin. The catalyst used is a Witco Co. #90 high point catalyst, which can be purchased on the open market. One percent (1%) is used to catalyze our coating.

Please note: Section IX Special Precautions (yellow flag) is the reason we used this chemical (resin).

If we can be of further assistance, please do not hesitate to contact us.

Sincerely,

Walter Gutierrez
949-581-8897

WG/rsm
Enclosures

cc: Martin Helcl

E N V I R O N M E N T A L D A T A S H E E T

***** MUST NOT BE DETACHED FROM MATERIAL SAFETY DATA SHEET *****

*** IF MSDS IS COPIED AND REDISTRIBUTED, THIS NOTICE MUST BE ATTACHED ***

MANUFACTURED BY: McWhorter Technologies
400 East Cottage Place
Carpentersville, IL. 60110

DATE OF LAST CHANGE: 95/06/01

PRODUCT NAME: 716 5141
PRODUCT CLASS: UNSATURATED POLYESTER RESIN

SECTION I. PRODUCT IDENTIFICATION/COMPOSITION

PROD	COMPONENT	CAS NUMBER	PERCENT
P	UNSATURATED POLYESTER RESIN	MIXTURE	100
	---TYPICAL DISTRIBUTION OF HAZARDOUS COMPONENTS--		
1	STYRENE	100-42-5	34.1

SECTION II. SARA TITLE III INFORMATION

PROD	EHS RQ (LBS) (*1)	EHS TPQ (LBS) (*2)	SEC 313 (*3)	311/312 CATEGORIES (*4)
P	33,333,333			1 3 4 5
1			YES	1 3 4 5

FOOTNOTES

*1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SARA SEC.302/304
*2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SARA SEC.302
*3 = TOXIC CHEMICAL, SARA SEC 313
*4 = HAZARD CATEGORY FOR SARA SEC. 311/312 REPORTING
1 = FIRE HAZARD
2 = SUDDEN RELEASE OF PRESSURE HAZARD
3 = REACTIVE HAZARD
4 = IMMEDIATE (ACUTE) HEALTH HAZARD
5 = DELAYED (CHRONIC) HEALTH HAZARD

SECTION III. DOT/CERCLA INFORMATION

THE CERCLA REPORTABLE QUANTITY (RQ) FOR THIS MIXTURE IS 2,935 LBS.
WHICH IS BASED ON THE RQ OF EACH INGREDIENT AND ITS PERCENT IN MIXTURE.

SECTION IV. ADDITIONAL REGULATORY INFORMATION

THE POLYMER AND ALL COMPONENTS OF THIS PRODUCT ARE PRESENT ON THE UNITED STATES TOXIC SUBSTANCES CONTROL ACT (TSCA) CHEMICAL SUBSTANCES INVENTORY.

SECTION V.	DISCLAIMER	716 5141(CONT.)

THE INFORMATION IN THIS MSDS AND ENVIRONMENTAL DATA SHEET WAS OBTAINED FROM SOURCES WHICH WE BELIEVE ARE RELIABLE. HOWEVER, THE INFORMATION IS 'ROVIDED WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, REGARDING ITS ACCURACY OR COMPLETENESS.

M A T E R I A L S A F E T Y D A T A S H E E T
COATINGS, RESINS, AND RELATED MATERIALS

MANUFACTURED BY:
McWhorter Technologies, Inc. EMERGENCY CONTACT: CHEMTREC 1-800-424-9300
400 East Cottage Place
arpentersville, IL. 60110
INFORMATION CONTACT:1-800-882-1371 (DURING NORMAL BUSINESS HOURS)
DATE OF PREP: 3/21/97 SUPERSEDES DATE: 12/05/95 DATE OF PRINT: 5/09/97

SECTION I. PRODUCT IDENTIFICATION

PRODUCT CODE: (INTERNAL REF.#162)
716 5141
PRODUCT NAME :
UNSATURATED POLYESTER RESIN
SHIPPING DESCRIPTION:
RESIN SOLUTION,
3, UN 1866, PG III
MARINE POLLUTANT, CONTAINS:
STYRENE
1,2,4-TRIMETHYLBENZENE

SECTION II. HAZARDOUS INGREDIENTS

* WARNING * THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

* THIS PRODUCT IS LESS THAN 35% MONOMER (OR IS A VAPOR * SUPPRESSED RESIN). PLEASE REFER TO LOCAL AREA * REGULATIONS FOR ADDITIONAL SPECIFICS. *

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM
HEALTH: 2 * FLAMMABILITY: 3
REACTIVITY: 1

INGREDIENT / CAS NO.	WT. PERCENT	TLV ppm	TLV mg/m3	SOURCE	IDLH ppm	VAPOR PRESSURE (mm Hg @68F)	LEL
STYRENE 100-42-5	34.1	50.0000	215.00	TWA/ACGIH	700	4.30	1.10
		100.0000	425.00	FEDERAL PEL			
		100.0000	425.00	STEL/ACGIH			

SECTION III. PHYSICAL DATA

BOILING RANGE: 148-410 F PERCENT VOLATILE BY VOL: 42.41
SPECIFIC GRAVITY 1.116 EVAPORATION RATE (n-Bu Ac=1): 0.44
VAPOR DENSITY (AIR=1): 2.924 VAPOR PRESSURE (mm Hg@68F): 3.63
VOLATILE ORGANIC CONTENT (VOC): N/A
APPEARANCE AND ODOR: light straw colored solution - styrene odor
SOLUBILITY IN WATER: negligible

FLASH POINT: 86 DEG. F SETAFLASH OSHA CLASSIFICATION: IC
FLAMMABLE LIMITS % BY VOLUME IN AIR AT 212 DEG. F:
LOWER EXPLOSION LIMIT: 2.00
UPPER EXPLOSION LIMIT: 12.00

EXTINGUISHING MEDIA:
Use foam, carbon dioxide or chemical fire fighting apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Closed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES
The use of self-contained breathing apparatus is recommended for fire fighters. Water spray may be used for cooling containers to prevent possible pressure build-up and auto-ignition or explosion when exposed to extreme heat.
Avoid spreading burning liquid with water used for cooling.

SECTION V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE:
See Section II.

EFFECTS OF OVEREXPOSURE:

--- EYES CONTACT:
Severe irritation, redness, tearing and blurred vision.

--- SKIN CONTACT:
Prolonged or repeated exposure can cause moderate irritation, defatting, dermatitis and sensitization.

--- INHALATION:
Excessive inhalation of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea and headache. High concentrations may result in narcosis. (Central Nervous System depression)

--- INGESTION:
Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

Chronic exposure may cause damage to the Central Nervous System, Respiratory System, Lungs, Eyes, Skin, Gastrointestinal Tract, Liver, Spleen and Kidneys.

OTHER HEALTH EFFECTS:
Based upon a re-evaluation of previous negative and equivocal data and an increased incidence of lung tumors after oral administration in young adult mice, the International Agency for Research on Cancer (IARC) has listed styrene among those materials for which there is limited evidence for carcinogenicity in animals.

SECTION V. HEALTH HAZARD DATA 716 5141(CONT.)

EMERGENCY AND FIRST AID PROCEDURES

--- EYES CONTACT:
Flush with clean, lukewarm water for at least 15 minutes, occasionally lifting the eyelids. Obtain medical attention.

--- SKIN CONTACT:
Remove contaminated clothing. Wash affected skin areas thoroughly with soap and water. Wash contaminated clothing thoroughly before re-use.

--- INHALATION:
Remove to fresh air. Apply artificial respiration or administer oxygen, if necessary. Call a physician immediately.

--- INGESTION:
Keep person warm, quiet and get immediate medical attention. Do not induce vomiting, because aspiration of material into the lungs from vomiting can cause chemical pneumonitis which can be fatal.

SECTION VI. REACTIVITY DATA

STABILITY:
Stable under normal conditions. Avoid exposure to excessive heat.

INCOMPATIBILITY:
Avoid contact with strong mineral acids, peroxides and polymerization catalysts.

HAZARDOUS POLYMERIZATION:
Can Occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition may yield carbon dioxide and/or monoxide.

CALIFORNIA SCAQMD RULE 443.1:
This product contains photochemically reactive volatile organic compound(s). Refer to Section II and III.

SECTION VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Evacuate all non-essential personnel. Remove all sources of ignition. Ventilate the area. Equip employees with appropriate protection equipment (See Section VIII). Dike around spilled material. Cover spill with inert absorbent material and shovel with non-sparking tools into container. Remove containers to a safe area and seal.

WASTE DISPOSAL METHOD:
Waste material must be disposed of in accordance with federal, state, and local environmental regulatory controls.

SECTION VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
Avoid breathing vapor or mist. If exposure may or does exceed occupational exposure limits (SEC.IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29CFR 1910.134 use either a full-face, atmosphere-supplying respirator or air-purifying respirator for organic vapors.

VENTILATION:
Local exhaust must be sufficient to keep airborne vapor concentrations below the TLV limit. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

PROTECTIVE GLOVES:
Polyvinyl alcohol gloves.

EYE PROTECTION:
Splash goggles.

OTHER PROTECTIVE EQUIPMENT:
Polyvinyl alcohol apron. Eye bath and safety shower. To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:
See first page of MSDS.

SECTION IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
Drums: Protect against physical damage. Outside or detached storage preferred.
Bulk: Storage should be in standard flammable liquid storage tanks.

OTHER PRECAUTIONS:
All equipment should be grounded and bonded to reduce static electricity hazard. Use non-sparking tools.

Overexposure to material has apparently been found to cause the following effects in laboratory animals: liver abnormalities, kidney damage, lung damage.

RECENT DATA DOES NOT SUPPORT THE CHANGE IN THE CLASSIFICATION BY IARC OF STYRENE TO BE A SUSPECTED CARCINOGEN.

At the conclusion of a major notice and comment

rulemaking revising its air contaminants regulations, OSHA concluded that the "current evidence on styrene's carcinogenicity does not support its classification in the final rule as a carcinogen." 54 Fed. Reg. 2430 (Jan. 19, 1989); see also 54 Fed. Reg. at 2364. In the same rulemaking, the National Institute for Occupational Safety and Health (NIOSH) commented that there "seems to be little basis from the experimental animal investigations or epidemiologic studies to conclude at this time that styrene is carcinogenic." Moreover, other scientists have independently concluded that styrene does not present a carcinogenic risk to humans. I. C. Munro, et al. "A Review of Styrene Pharmacokinetics and Carcinogenicity" (July 21, 1989)(CanTox Inc.)(U.S. EPA Safe Drinking Water Docket No. IID, Document III J2.86, Attachment C).

OTHER COMMENTS

We recommend that containers be either professionally reconditioned for reuse by certified firms or properly disposed of by certified firms to help reduce the possibility of an accident. Disposal of containers should be in accordance with applicable federal, state and local laws and regulations. "Empty" drums should not be given to individuals.

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding its accuracy or completeness.

The conditions of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

INDUSTRIAL COATING

Our coating is a unique corrosion resistant coating, without ; epoxy, urethan, isocyanat, that is unaffected by salt water, acid and ultraviolet sunlight. Application of such a coating, when applied to metal surfaces, would result in the savings of thousands of manhours, which, in the past, have been wasted on scraping and chipping paint from corroded and rusted surfaces.

An independent testing laboratory, in their Salt Spray Test Report reported the following:

1. The coated test panel was scribed and exposed to 5% salt spray [per ASTM B-117]. After 100 and 500 hours exposure, the panel was examined.
2. There was definite rusting at the scribe marks on both sides, but there was no visable undercutting or creeping of the corrosion past the scribe.
3. There was also rusting at the cut edges where coating was incomplete. Under the coating adjacent to the edges, the metal was shiny, with no indication of rust.
4. The panel was then returned to the exposure chamber for completion of the test.
5. After a total exposure of **1000** hours, the panel was removed and re-examined. Rusting continued at the scribe marks and the cut edges, but the coating contained the rust, with no **undercutting** or corrosion under the coating.

Year-long in-service tests on the hulls of ocean-going ships. After being exposed to actual salt water sea conditions for 6 months, our coating panels were intact, displaying no changes whatever from their original condition when first applied. Several adjacent panels were coated with other available "rust- proofing" coatings for comparison. These competitive coatings had nearly disappeared after the same 6 months exposure! the significance of this particular in-service test by a prospective customer is immediately apparent.

Another extremely significant test was conducted by a major oil company in one of their geothermal operations. The particular significance of their tests is the temperature and concentration of the brine encountered in the geothermal operation [above 400°F]! once again, after lengthy exposure [over 1,000 hours] our coatings displayed no deterioration whatever! in addition, scribe marks down to the bare steel were made in the coatings on the test slabs prior to submersion in the hot brine. After **1,000** hours of immersion, **no oxidation** penetrated beyond the scribes! The value of such a coating to all areas of industry [especially the petroleum & marine industries] in nothing short of phenomenal.

Our coating is ideally suited for ship hulls & superstructures, auto- motive bodies [primer coats], bridges, communication towers, off- shore platforms, etc., etc. Other applications are also suitable, depending on the material being coated and the severity of the environmental conditions to which the coating would be subjected. An additional monetary advantage is the fact that our coating is such that color pigment can be added, thereby negating the necessity of a "finish" coat, in many applications, such as bridges, ship hulls, etc. Also on wood & concrete.

OCM Test Laboratory, Inc., 1997 :

"Overall the material is a durable and resistant hard coating that may be suitable for many industrial uses hat currently used painted or powder coated polymer finishes. For specific applications, it would be advisable to perform comparative tests on the specific substrate and coating thickness as the competition. It is expected that this coating will out perform many currently used finishes in applications that see moderately severe combinations of environments."

In all comparisons, our product*s* provide more features and have superior performance than to competitive products. In most cases, the number of differences is substantial. Our products perform in virtually all situations. Enhanced materials have been created that are far superior to any coatings available today. Our breakthrough allows the user to require less coating product and less product application time, with better corrosion protection than available from any competitor. Additionally, our Industrial Coating is applied using the standard two-part equipment (plural system), but can be regulated to react with a rapid set-up time of as little as five to ten minutes. The combination oft these two unique features lowers the customers overall investment and increases the retum on their investment significantly. This ability is unique to this product, and our research indicates its performance is superior to anything.

The corrosion prevention and control industry grew from the need to abate the invasive and devastating effects of corrosion. Corrosion control products, if deployed, can stem the damaging effects of corrosion whether it is keeping bridges from deteriorating, preventing pipelines and metal tanks from eroding or preserving other industrial infrastructure.

The result of this need allows for the corrosion prevention and control market to remain a steady growth industry. In the United States alone, the market for this type of product was projected to be in excess of $300 billion in 1997 (source: NACE international). While we do not have definitive market research that establishes the worldwide market size, it can easily exceed $1 trillion based on the United States market estimates.

PRODUCT DATA	
	Fast cure thermoset complex co-polymeric material
Color	Gray, Blue, Green
Typical Uses	To protect all metal, steel structures, concrete, wood forms on structures Pipelines
Vehicles / Pigments	Complex co-polymer titanium dioxide and reinfolain pigments
Additives	Organic and non-organic materials
Weight / Gallon	12 lbs / gallon 1.44 kg / L
Flash point	N/a
V.O.C. Contents	Zero (0)
% Volume Solids	100
Dry film thickness	3.5 mils 90 [m
Coverage (theroetical)	640 square feet per gallon at 1 mil thickness 15.7 m² / 26 [m 200 square feet per gallon at 2.5 mil thickness 4.9 m² / 64 [m
Packaging	Available in 5 gallon pail and 55 gallon drum
Storage Temperature	50° - 90° F in a cool area 10 – 32 ° C
Safety Information	Consult safety data sheet for hazard & safety information
Temp. Const.	350 – 400° C

NON-HAZARADOUS, NON-DECOPOSITION MATERIALS	
Additives	All Additives are stable non-reactive, non-hazardous decomposition organic and non-organic materials.
Toxic	Non-toxic materials Non-flamable and will not support composition.
Odor	Odorless Odor threshold (ppm) not applicaple Specific gravity 2.50 to 2.80 Vapor pressure (mm) not applicable Boiling point °F: greater than 1000°F / 538°C Solubility in water : nil % Volatile (by weight): not applicaple Volatile organic content (voc): n/a

SILIKOFTAL® ED

binder for the manufacture of specific gloss siloxane-coatings

Special properties

- extraordinary gloss retention and weather resistance
- excellent corrosion resistance
- very good antigraffiti-effect

Examples of application

Corrosion resistance coatings with excellent weather resistance for

- structural steel
- industrial plants
- power plants
- offshore-industry
- wastewater treatment plants
- wood and paper industry
- maritime area: decks, topsides and boattops on ships and barges
- concrete walls and floors
- exterior coating for rail cars, busses and trucks

Processing instructions

- All weather stabile pigments can be used.
- Apply by spray (also electrostatic) or brushing.

Dilution

- SILIKOFTAL® ED can be diluted by alcohol, ketones, glycol and glycol ethers.

Chemical description

epoxy-siloxane resin

Technical information

• solid		97.5 - 99.5 %
• epoxy-equivalent weight	DIN 16945	420 - 480 g
• density at 25 °C	DIN 51757	1.14 - 1.16 g/ml
• viscosity at 25 °C	DIN 53019	1000 - 2000 mPas

Stoving conditions

After the coating is tack free, it can be stoved for a quicker crosslinking at temperatures over 60 °C.

Properties

Excellent stability of a coating based on our guiding formulation against acidity and alkaline attacks as well as outstanding water and solvent resistance.

Registration status

The active ingredient of SILIKOFTAL® ED is listed in the following chemical inventories: EINECS.
TSCA, MITI and DSL are pending.

Packaging

steel can	50 kg
steel container with bung	200 kg

Storage stability

In general at least 12 months in closed containers. But contact with tin (e. g. with metal containers) will shorten storage stability.

Tego Chemie Service GmbH · Goldschmidtstrasse 100 · D-45127 Essen · Tel.: +49 (0)201/173-2222 · Fax: +49 (0)201/173-1939 · www.tego.de

Material Safety Data Sheet

Version: 1.5

Revision Date : 08/08/2003
Date Issued : 01/09/2004

SILIKOFTAL ED

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Trade name	:	SILIKOFTAL ED
PRODUCT CODE	:	205505
CHEMICAL FAMILY	:	Siliconeepoxide resin, solvent-free
Information on manufacturer/supplier	:	Tego Chemie Service GmbH Goldschmidtstr. 100 Essen, 05 45127
Emergency telephone number (24h)	:	Telephone:
		CHEMTREC (800) 424-9300
		CANUTEC (613) 996-6666
		Non-Emergency Phone Number: (800) 732-5616

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Concentration [%]
All Ingredients Are Proprietary		

3. HAZARDS IDENTIFICATION

Emergency Overview

Physical Appearance

Form	:	Liquid
Colour	:	yellow
Odour	:	characteristic
Water solubility	:	insoluble
pH	:	not applicable

Potential health effects

Immediate concerns	:	No particular hazards are known.
Eyes	:	No harmful effects have been reported upon contact with the eyes.
Skin	:	No harmful effects have been reported upon contact with skin.

Ingestion	:	No harmful effects have been reported upon ingestion.
Inhalation	:	No harmful effects have been reported upon inhalation.
Primary routes of entry	:	None
Target organs	:	None
Carcinogenicity	:	Not listed by NTP, IARC, ACGIH, or OSHA as a carcinogen.

4. FIRST AID MEASURES

Eyes	:	Flush eye immediately and thoroughly while protecting the unhurt eye. If symptoms persist, seek medical attention.
Skin	:	Immediately and thoroughly, wash off with soap and water.
Ingestion	:	If swallowed, seek medical attention and show MSDS.
Inhalation	:	Ensure supply of fresh air.
General advice	:	Remove contaminated clothing.

5. FIRE-FIGHTING MEASURES

Flash point	:	248 °F
Autoignition temperature	:	not measured
Upper Explosion limits	:	not measured
Lower explosion limit	:	not measured
Suitable extinguishing media	:	foam, carbon dioxide, dry powder, water spray.
Extinguishing media which must not be used for safety reasons	:	not applicable
Products in case of fire	:	In the event of fire the following can be released: - Carbon monoxide, carbon dioxide, silicon dioxide Under certain conditions of combustion traces of other toxic substances cannot be excluded

Special protective equipment for firefighters	:	As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.
Hazardous decomposition products	:	None with proper storage and handling.
OSHA flammable class	:	Combustible Liquid, Class IIIB

6. ACCIDENTAL RELEASE MEASURES

Methods for cleaning up / taking up	:	Small spills : Use personal protective equipment. Do not allow to enter drains or waterways. Do not discharge into the subsoil/soil. Take up with absorbent material (e.g. sand, kieselguhr, universal binder).

Release Notes :

US regulations require reporting spills of this material that could reach any surface waters
The toll free number for the US Coast Guard National Response Center is (800) 424-8802

In case of accident or road spill notify :

	Telephone:
CHEMTREC USA	(800) 424-9300
CANUTEC Canada	(613) 996-6666
CHEMTREC (other countries)	(International code)+1-202-483-7616

7. HANDLING AND STORAGE

General Procedures Handling

Advice on safe handling	:	Wear respiratory protection when spraying. Ensure adequate ventilation.
Advice on protection against fire and explosion	:	No special measures required.

Storage

Further information	:	Keep container tightly closed

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal protection equipment

Hygiene measures	:	No smoking, eating or drinking allowed when using this product. Wash hands before breaks and at end of work shift.
Respiratory protection	:	In case of formation of vapors/aerosols: respiratory protective equipment, cartridge for organic gases and vapors.
Hand protection	:	PVC gloves
Eye protection	:	Use chemical resistant goggles.
Protective clothing	:	Light protective clothing is required.
Engineering controls	:	Good general (mechanical) ventilation should be sufficient to control airborne levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	Liquid
Colour	:	yellow
Odour	:	characteristic
Melting temperature	:	not measured
Boiling temperature	:	not measured
Vapour pressure	:	not measured
Density	:	1.135 - 1.15 g/cm3 at 77.00 °F Method: DIN 51757
Weight per volume	:	9.53 Lb/Gal
Water solubility	:	insoluble
pH	:	not applicable
Viscosity, dynamic	:	1,000 - 2,000 mPa.s at 25 °C Method: DIN 53019
Volatile organic compound	:	volatile in water: 0.001 %

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None with proper storing and handling.
Thermal decomposition	:	Not measured
Hazardous reactions	:	No hazardous reactions with proper storage and handling.
Hazardous polymerisation	:	No
Stability	:	Yes
Hazardous decomposition products	:	None with proper storage and handling.

11. TOXICOLOGICAL INFORMATION

Note	:	Proper use provided, no adverse health effects have been observed or have been come to our knowledge.

12. ECOLOGICAL INFORMATION

Further ecological information

Ecological notes	:	The product is considered to be a weak water pollutant (German law). Do not allow to enter soil, waterways or waste water canal.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local, state, and federal regulations.

Product disposal and disposal requirements	:	In accordance with local authority regulations, take to special waste incineration plant
Contaminated packaging	:	If empty contaminated containers are recycled or disposed of, the receiver must be informed about possible hazards.

14. TRANSPORT INFORMATION

Sea transport

IMDG:

Not regulated

Air transport

ICAO/IATA:
Not regulated

DOT (Department of Transportation)

CFR Road:
Not regulated
CFR Rail:
Not regulated

CANADA Transport of Dangerous goods

TDG Road:
Not regulated
TDG Rail:
Not regulated

15. REGULATORY INFORMATION

United States

SARA Section 311/312 : Fire: No
Pressure generating: No
Reactivity: No
Acute: No
Chronic: No

SARA Sections : SECTION 313
Notification : Yes

Components	CAS-No.	Concentration [%]
methanol	67-56-1	0.099

butanol; butyl alcohol	71-36-3	0.002

TSCA (Toxic Substance Control Act) : SECTION 12(B)
Notification : Yes

Components	CAS-No.	Concentration [%]
butanol; butyl alcohol	71-36-3	0.002

TSCA (Toxic Substance Control Act) : TSCA Inventory
Notification : Yes
All intentional ingredients are listed in the TSCA Inventory or comply with TSCA Polymer Exemption critieria per 40 CFR 723.

TSCA (Toxic Substance Control Act) : SECTION 13
Notification : Yes

California Proposition 65 Statement : Notification : No
This product does not contain any substance(s) which are defined by the state of California to cause cancer, birth defects, or other reproductive effects.

CERCLA : CAS 71-36-3 : 500 lb

Canada : WHMIS CLASSIFICATION
Non-WMHIS

Canadian Environmental Protection Act
All intentional ingredients are listed on the DSL (Domestic Substance List) or have been notified pursuant to the NSN regulations.

16. OTHER INFORMATION

Material Safety Data Sheet

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SILIKOFTAL ED

HMIS Codes : Fire : 1
Health : 1
Physical Hazard : 0
Protection : X

Manufacturer disclaimer : While the information and recommendations contained herein are believed to be accurate, we make no warranty with respect hereto and disclaim all liability from reliance thereon